

Enoree River Basin Description

The **Enoree River Basin** encompasses 731.3 square miles that extend across the Piedmont region of the State. The Enoree River Basin encompasses 5 watersheds and 468,025 acres, of which 67.2% is forested land, 11.7% is agricultural land, 10.7% is scrub/shrub land, 9.5% is urban land, 0.7% is barren land, and 0.2% is water. The urban land percentage is comprised chiefly of a portion of the Greenville Metropolitan area. This predominantly rural area has approximately 885.7 stream miles and 1,040.3 acres of lake waters. The Enoree River originates near the City of Travelers Rest and accepts drainage from Beaverdam Creek, Warrior Creek, and Duncan Creek before draining into the Broad River.

Physiographic Regions

The State of South Carolina has been divided into six Major Land Resource Areas (MLRAs) by the USDA Soil Conservation Service. The MLRAs are physiographic regions that have soils, climate, water resources, and land uses in common. The physiographic region defining the Enoree River Basin is as follows:

The **Piedmont** is an area of gently rolling to hilly slopes with narrow stream valleys dominated by forests, farms, and orchards; elevations range from 375 to 1,000 feet.

Land Use/Land Cover

General land use/land cover data for South Carolina was derived from SCDNR 1990 SPOT multispectral satellite images using image mapping software to inventory the State's land classifications, which are as follows.

Urban land is characterized by man-made structures and artificial surfaces related to industrial, commercial, and residential uses, as well as vegetated portions of urban areas.

Agricultural/Grass land is characterized by cropland, pasture, and orchards and may include some grass cover in urban, scrub/shrub, and forest areas.

Scrub/Shrub land is adapted from the western Rangeland classification to represent the "fallow" condition of the land (currently unused, yet vegetated), and is most commonly found in the dry Sandhills region including areas of farmland, sparse pines, regenerating forest lands, and recently harvested timber lands.

Forest land is characterized by deciduous and evergreen trees not including forests in wetland settings.

Forested Wetland (swampland) is the saturated bottomland, mostly hardwood forests that are primarily composed of wooded swamps occupying river floodplains and isolated low-lying wet areas, primarily located in Coastal Plain.

Nonforested Wetland (marshland) is dependent on soil moisture to distinguish it from Scrub/Shrub since both classes contain grasses and low herbaceous cover; nonforested wetlands are most common along the coast and isolated freshwater areas found in the Coastal Plain.

Barren land is characterized by an unvegetated condition of the land, both natural (rock, beaches, unvegetated flats) and man-induced (rock quarries, mines, and areas cleared for construction in urban areas or clearcut forest areas).

Water (non-land) includes both fresh and tidal waters.

Soil Types

The dominant soil associations, or those soil series comprising, together, over 40% of the land area, were recorded for each watershed in percent descending order. The individual soil series for the Enoree River Basin are described as follows.

Cecil soils are deep, well drained, gently sloping to sloping soils that have red subsoil.

Davidson soils are deep, gently sloping to strongly sloping, well drained to somewhat poorly drained soils with a loamy surface layer and a clayey subsoil.

Madison soils are well drained, moderately sloping soils, with clayey subsoil, moderately deep.

Pacolet soils are well drained, moderately steep soils with clayey subsoil, moderately deep.

Wilkes soils are dominantly strongly sloping to steep, well drained soils.

Slope and Erodibility

The definition of soil erodibility differs from that of soil erosion. Soil erosion may be more influenced by slope, rainstorm characteristics, cover, and land management than by soil properties. Soil erodibility refers to the properties of the soil itself, which cause it to erode more or less easily than others when all other factors are constant.

The soil erodibility factor, K, is the rate of soil loss per erosion index unit as measured on a unit plot, and represents an average value for a given soil reflecting the combined effects of all the soil properties that significantly influence the ease of soil erosion by rainfall and runoff if not protected. The K values closer to 1.0 represent higher soil erodibility and a greater need for best management practices to minimize erosion and contain those sediments that do erode. The range of K-factor values in the Enoree River Basin is from 0.25 to 0.27.

Fish Consumption Advisory

At the time of publication, there are no fish consumption advisories in the Enoree River Basin. Fish consumption advisories are updated annually in March. For background information and the most current advisories please visit the Bureau of Water homepage at <http://www.scdhec.net/water> and click on "Advisories". For more information or a hard copy of the advisories, call SCDHEC's Division of Health Hazard Evaluation toll-free at (888) 849-7241.

Climate

Normal yearly rainfall in the Enoree River Basin area is 48.5 inches, according to the S.C. historic climatological record. Data compiled from National Weather Service stations in Greenville-Spartanburg WSO Airport, Woodruff, Laurens, Whitmire 2NE, and Newberry were used to determine the general climate information for this portion of the State. The highest level of rainfall occurs in the spring with 13.58 inches; 12.51, 10.27, and 12.44 inches of rain falls in the summer, fall, and winter, respectively. The average annual daily temperature is 60.9EF. Spring temperatures average 60.9EF and summer, fall, and winter temperatures are 77.6EF, 61.7EF, and 43.5EF, respectively.

Watershed Evaluations

03050108-010

(Enoree River)

General Description

Watershed 03050108-010 is located in Greenville, Spartanburg, and Laurens Counties and consists primarily of the **Enoree River** and its tributaries from its origin to Beaverdam Creek. The watershed occupies 167,337 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Madison series. The erodibility of the soil (K) averages 0.27, and the slope of the terrain averages 10% with a range of 2-25%. Land use/land cover in the watershed includes: 46.5% forested land, 23.1% urban land, 18.8% agricultural land, 10.5% scrub/shrub land, 0.9% barren land, and 0.2% water.

The Enoree River originates near the City of Travelers Rest and accepts drainage from the North Enoree River, Long Branch, Beaverdam Creek, Buckhorn Creek (Buckhorn Lake), Mountain Creek (Mountain Lake, Paris Mountain State Park Lake), Cane Creek, and Princess Creek. Brushy Creek flows through the City of Greenville to enter the river next followed by Rocky Creek (Oak Grove Lake, Shannon Lake, Little Rocky Creek), Dillard Creek, Abner Creek (Vine Creek, Padgett Creek), another Little Rocky Creek, and Peters Creek. Gilder Creek (Earls Lake) originates near the City of Mauldin and is joined by Bridge Fork Creek, Little Gilder Creek, Graze Branch, Horsepen Creek, and Long Branch before flowing into the river downstream of Peters Creek. Hunter Branch enters the river next followed by Buzzard Spring Branch and Lick Creek.

Durbin Creek originates near the City of Simpsonville and accepts drainage from Howard Branch, Wilson Branch, Little Durbin Creek, and South Durbin Creek (Reedy Creek) before draining into the Enoree River. Dildane Creek flows into the river downstream of Durbin Creek and is followed by Brock Page Creek and Boggy Creek. There are several ponds (totaling 343.6 acres) and a total of 321.4 stream miles in this watershed. Paris Mountain State Park is located to the north of the City of Greenville, and all waters within the park are classified ORW. Beaverdam Creek is classified ORW from its headwaters to SR 563; an unnamed tributary to Beaverdam Creek is classified ORW from its headwaters, including the lake, to SR 22; Buckhead Creek is classified ORW from its headwaters, including Buckhorn Lake, to North Buckhorn Road; and an unnamed tributary to Mountain Creek is classified ORW from its headwaters, including Mountain Lake and Paris Mountain State Park Lake, to Mountain Creek. The remaining streams in the watershed are classified FW. There is a Heritage Trust Preserve along the Enoree River just upstream of its confluence with the North Enoree River.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
BE-001	P	FW	ENOREE RIVER AT UNNUMBERED ROAD W OF U.S. 25, N OF TRAVELERS REST
B-797	BIO	FW	ENOREE RIVER AT PINE LOG FORD RD., 2 ND CROSSING ABOVE SC 253 BRIDGE
BE-039	S	FW	BEAVERDAM CREEK AT ROAD 1967

B-796	BIO	FW	BEAVERDAM CREEK AT SC 253
B-795	BIO	FW	BUCKHORN CREEK AT SR 562
B-186	S	FW	MOUNTAIN CREEK AT S-23-335
BE-008	BIO	FW	MOUNTAIN CREEK AT SR 279
B-192	P	FW	PRINCESS CREEK AT SUBER MILL RD, SECOND ROAD S OF US 29 OFF S-23-540
BE-015	S	FW	ENOREE RIVER AT COUNTY ROAD 164
BE-035	S/BIO	FW	BRUSHY CREEK AT HOWELL RD (S-23-273), APPROX. 5 MI NE OF GREENVILLE
BE-009	S/BIO	FW	BRUSHY CREEK AT S-23-164
BE-007	S/BIO	FW	ROCKY CREEK AT BATESVILLE BRIDGE, 1 MI ABOVE CONFL. WITH ENOREE R.
B-792	BIO	FW	ABNER CREEK AT BENNETTS RIDGE RD.
BE-017	P	FW	ENOREE RIVER AT SC 296, 7.5 MI NE OF MAULDIN
BE-040	S	FW	GILDER CREEK AT SC 14, ABOVE GILDERS CREEK PLANT
B-241	S	FW	GILDER CREEK AT S-23-142, 2.75 MI ENE OF MAULDIN
B-793	BIO	FW	HORSEPEN CREEK AT SR 145
BE-020	S/BIO	FW	GILDER CREEK AT S-23-143, 1/4 MI ABOVE CONFLUENCE WITH ENOREE RIVER
BE-018	S/BIO	FW	ENOREE RIVER AT S-30-75
BE-019	BIO	FW	ENOREE RIVER AT SC 418
B-037	S	FW	ENOREE RIVER AT S-42-118, SW OF WOODRUFF
B-038	S	FW	LICK CREEK AT S-42-118, 1.25 MI SW WOODRUFF
B-035	S	FW	DURBIN CREEK ON S-23-160, 3 MI E OF SIMPSONVILLE
B-097	P	FW	DURBIN CREEK AT SC 418
BE-022	BIO	FW	DURBIN CREEK AT SC 101
B-040	W	FW	ENOREE RIVER AT S-30-112

Enoree River -There are eight monitoring sites along this section of the Enoree River. At the furthest upstream site (**BE-001**), aquatic life uses are not supported due to occurrences of zinc in excess of the aquatic life acute standards, including 18 very high concentrations of zinc. The source of the zinc is contaminated groundwater discharging to the river. The contamination originates from the site currently operated by South Atlantic Galvanizing. An initial attempt at groundwater recovery consisted of the installation of a sump pump at a site where groundwater discharge created a spring. The recovered groundwater was pumped back to the facility and used as process water in their production operation. In February of 2001 it was concluded that the amount of groundwater being reprocessed was inadequate to achieve standards compliance in the stream. Additional remediation is planned. A very high concentration of chromium was measured in water in 1998. There is also a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. P,P'DDT and metabolites of DDT(P,P'DDE and P,P'DDD) were detected in the 1995 sediment sample. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. In addition, there was a significant increasing trend in fecal coliform bacteria concentrations.

At the next site downstream (**B-797**), aquatic life uses are partially supported based on macroinvertebrate community data. Further downstream (**BE-015**), aquatic life uses are fully supported. There is a significant increasing trend in pH. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

At the next downstream site (**BE-017**), aquatic life uses are not supported due to occurrences of

copper in excess of the aquatic life acute standards. There is a significant increasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentrations suggests improving conditions for this parameter. Aquatic life uses are partially supported based on macroinvertebrate community data at the next site downstream (**BE-018**). A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

Further downstream (**BE-019**), aquatic life uses are partially supported based on macroinvertebrate community data. At the next site downstream (**B-037**), aquatic life uses are fully supported. There is a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. At the furthest downstream site (**B-040**), aquatic life uses are fully supported, but recreational uses are partially supported due to fecal coliform bacteria excursions.

Beaverdam Creek - There are two monitoring sites along Beaverdam Creek. At the upstream site (**BE-039**), aquatic life uses are fully supported. There is a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. In addition, there is a significant increasing trend in fecal coliform bacteria concentrations. At the downstream site (**B-796**), aquatic life uses are partially supported based on macroinvertebrate community data.

Buckhorn Creek (B-795) - Aquatic life uses are partially supported based on macroinvertebrate community data.

Buckhorn Lake - In an effort to provide access for swimming and fishing, aquatic herbicides were applied in 1994.

Mountain Creek - There are two monitoring sites along Mountain Creek. Aquatic life uses are fully supported at the upstream site (**B-186**), and a significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. At the downstream site (**BE-008**), aquatic life uses are partially supported based on macroinvertebrate community data.

Mountain Lake - In an effort to provide access for swimming and fishing, 100 triploid grass carp were stocked in Mountain Lake in 2001.

Princess Creek (B-192) - Aquatic life uses are not supported due to occurrences of zinc in excess of the aquatic life acute standards, including a very high concentration of zinc measured in 1995. A very high concentration of lead was measured in 1996. There is also a significant increasing trend in pH. In sediment, a very high concentration of chromium was measured in the 1999 sample and P,P'DDT was detected in the 1996 sample. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are not supported due to fecal coliform bacteria excursions. In addition, there was a significant increasing trend in fecal coliform bacteria concentrations.

Brushy Creek - There are two monitoring sites along Brushy Creek. At the upstream site (**BE-035**), aquatic life uses are partially supported based on macroinvertebrate community data. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. At the furthest downstream site (**BE-009**), aquatic life uses are also partially supported based on macroinvertebrate community data. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. A total maximum daily load (TMDL) has been developed for both BE-035 and BE-009 to address these impairments (see Watershed Protection and Restoration Strategies below).

Rocky Creek (BE-007) - Aquatic life uses are partially supported based on macroinvertebrate community data. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions.

Abner Creek (B-792) - Aquatic life uses are partially supported based on macroinvertebrate community data.

Horsepen Creek (B-793) - Aquatic life uses are partially supported based on macroinvertebrate community data.

Gilder Creek - There are three monitoring sites along Gilder Creek. Recreational uses are not supported at any site due to fecal coliform bacteria excursions that were compounded by a significant increasing trend in fecal coliform bacteria concentrations. Aquatic life uses are fully supported at the upstream site (**BE-040**), and a significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. At the next site downstream (**B-241**), aquatic life uses are also fully supported. There is a significant increasing trend in pH. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters. At the furthest downstream site (**BE-020**), aquatic life uses are partially supported based on macroinvertebrate community data. There is a

significant increasing trend in pH. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters.

Lick Creek (B-038) - Aquatic life uses are fully supported. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions.

Durbin Creek - There are three monitoring sites along Durbin Creek. Aquatic life uses are fully supported at the upstream site **(B-035)**. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. At the next site downstream **(B-097)**, aquatic life uses are fully supported. There is a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. At the furthest downstream site **(BE-022)**, aquatic life uses are fully supported based on macroinvertebrate community data.

Natural Swimming Areas

<i>FACILITY NAME</i>	<i>PERMIT #</i>
<i>RECEIVING STREAM</i>	<i>STATUS</i>
PARIS MOUNTAIN STATE PARK LAKE	23-N05
MOUNTAIN CREEK TRIBUTARY	ACTIVE

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM</i>	<i>NPDES#</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
<i>PERMITTED FLOW @ PIPE (MGD)</i>	<i>LIMITATION</i>
ENOREE RIVER	SC0045802
CITY OF WOODRUFF	MINOR DOMESTIC
PIPE #: 001 FLOW: 0.7	EFFLUENT
ENOREE RIVER	SCG250062
POLYTECH INC.	MINOR INDUSTRIAL
PIPE #: 001 FLOW: M/R	EFFLUENT
ENOREE RIVER	SC0038229
NATIONAL STARCH & CHEMICAL CO.	MAJOR INDUSTRIAL
PIPE #: 002 FLOW: 0.12	WATER QUALITY
WQL FOR BOD5,DO,TRC,NH3N	

<p>ENOREE RIVER INMAN MILLS/RAMEY PLANT PIPE #: 001 FLOW: 0.05 WQL FOR BOD5,DO,TRC,NH3N</p>	<p>SC0002496 MINOR INDUSTRIAL WATER QUALITY</p>
<p>ENOREE RIVER WCRSA/TAYLORS AREA PLANT PIPE #: 001 FLOW: 7.5 WQL FOR BOD5,DO,TRC,NH3N TO BE ELIMINATED (TIED INTO WCRSA/PELHAM PLT)</p>	<p>SC0024309 MAJOR DOMESTIC WATER QUALITY</p>
<p>ENOREE RIVER WCRSA/PELHAM PLANT WWTP PIPE #: 001 FLOW: 7.5 (EXPANDING TO 22.5MGD) WQL FOR BOD5,DO,TRC,NH3N SCHEDULED FOR EXPANSION (INCORPORATING TAYLORS PLT)</p>	<p>SC0033804 MAJOR DOMESTIC WATER QUALITY</p>
<p>ENOREE RIVER WCRSA/GILDER CREEK PIPE #: 001 FLOW: 4.0 PIPE #: 001 FLOW: 5.0, 8.0, 12.0 (PROPOSED) WQL FOR BOD5,DO,TRC,NH3N</p>	<p>SC0040525 MAJOR DOMESTIC WATER QUALITY WATER QUALITY</p>
<p>ENOREE RIVER GREENWOOD HOLDING CORP./GREER PIPE #: 001 FLOW: 0.03 WQL FOR BOD5,DO</p>	<p>SC0042056 MINOR INDUSTRIAL WATER QUALITY</p>
<p>ENOREE RIVER TRIBUTARY BUCK-A-ROO RANCH INC. PIPE #: 001 FLOW: 0.0101 WQL FOR TRC,NH3N</p>	<p>SC0026662 MINOR DOMESTIC WATER QUALITY</p>
<p>BEAVERDAM CREEK TRIBUTARY WCRSA/COACHMAN ESTATES PIPE #: 001 FLOW: 0.025 WQL FOR BOD5,DO,TRC,NH3N</p>	<p>SC0024040 MINOR DOMESTIC WATER QUALITY</p>
<p>MOUNTAIN CREEK ALTAMONT FOREST PIPE #: 001 FLOW: 0.0124 WQL FOR TRC,NH3N</p>	<p>SC0034398 MINOR DOMESTIC WATER QUALITY</p>
<p>MOUNTAIN CREEK MORTON INTERNATIONAL, INC. PIPE #: 001 FLOW: M/R</p>	<p>SCG250097 MINOR INDUSTRIAL EFFLUENT</p>
<p>PRINCESS CREEK CLIFFSTAR CORP./GREER PIPE #: 001 FLOW: M/R</p>	<p>SCG250047 MINOR INDUSTRIAL EFFLUENT</p>
<p>PRINCESS CREEK EXIDE/GENERAL BATTERY CORP. PIPE #: 001 FLOW: M/R PRINCESS CREEK TEXTRON/GREER GROUNDWATER TRT. SYS. PIPE #: 001 FLOW: M/R</p>	<p>SC0042633 MINOR INDUSTRIAL EFFLUENT SC0047988 MINOR INDUSTRIAL EFFLUENT</p>

BRUSHY CREEK
LIBERTY LIFE INSURANCE CO.
PIPE #: 001 FLOW: 0.03

SCG250166
MINOR INDUSTRIAL
EFFLUENT

ROCKY CREEK TRIBUTARY
NYCOIL COMPANY/DM DIV.
PIPE #: 001 FLOW: M/R

SCG250061
MINOR INDUSTRIAL
EFFLUENT

ROCKY CREEK TRIBUTARIES
GE/GREENVILLE GAS TURBINE PLT
PIPE #: 001 FLOW: 0.45
PIPE #: 010 FLOW: M/R
PIPE #: 011 FLOW: M/R

SC0003484
MINOR INDUSTRIAL
EFFLUENT
EFFLUENT
EFFLUENT

VINE CREEK
HANSON AGGREGATE/PELHAM QUARRY
PIPE #: 001 FLOW: M/R

SCG730042
MINOR INDUSTRIAL
EFFLUENT

PADGETT CREEK
SSSD/HIGHWAY 101 BUSINESS PARK
PIPE #: 001 FLOW: 0.03-0.04
WQL FOR BOD5,DO,TRC; NH3N IN SUMMER & WINTER

SC0047350
MINOR DOMESTIC
WATER QUALITY

BRIDGE FORK CREEK
METROMONT MATERIALS/MAULDIN
PIPE #: 001 FLOW: 0.002

SC0038016
MINOR INDUSTRIAL
EFFLUENT

DURBIN CREEK
WCRSA/DURBIN CREEK PLT
PIPE #: 001 FLOW: 3.3
WQL FOR BOD5,DO,TRC,NH3N

SC0040002
MAJOR DOMESTIC
WATER QUALITY

DURBIN CREEK
PARA-CHEM SOUTHERN, INC.
PIPE #: 001 FLOW: M/R

SCG250117
MINOR INDUSTRIAL
EFFLUENT

LITTLE ROCKY CREEK
BROCKMAN CATFISH FARM
PIPE #: 001 FLOW: 0.1
WQL FOR BOD5,DO

SCG130007
MINOR INDUSTRIAL
WATER QUALITY

Nonpoint Source Management Program

Camp Facilities

FACILITY NAME/TYPE
RECEIVING STREAM

PERMIT #
STATUS

CAMP BUCKHORN/RESIDENT
BUCKHORN CREEK

23-305-0127
ACTIVE

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
ENOREE SANITARY LANDFILL DOMESTIC	231001-1101 (231001-1201, CWP-040) CLOSED
ENOREE C/D LANDFILL DOMESTIC	DWP-088 (231001-1201, CWP-040) CLOSED
ENOREE LANDFILL DOMESTIC	231001-1102 (231001-1201, CWP-040) ACTIVE
R. FALCON LANDFILL DOMESTIC	302900-1301 -----
GENERAL ELECTRIC INDUSTRIAL	IWP-232 (SCD049126097) -----
GENERAL ELECTRIC CONSTRUCTION	233321-1201 (CWP-035) -----
STEELE HEDDLE INDUSTRIAL	IWP-171 (SCD002267490) -----
BAHAN MACHINE & FOUNDRY CO., INC. INDUSTRIAL	IWP-008 (SCD987566767) -----

Land Application Sites

<i>LAND APPLICATION SYSTEM FACILITY NAME</i>	<i>ND# TYPE</i>
SPRAYFIELD WCRSA/DURBIN CREEK PLANT	SC0040002 DOMESTIC

Mining Activities

<i>MINING COMPANY MINE NAME</i>	<i>PERMIT # MINERAL</i>
PELHAM STONE CO. PELHAM QUARRY	0431-83 GRANITE
COGDILL & LAWSON COGDILL & LAWSON MINE	0875-83 SAND (RIVER DREDGE)
BROWN BROWN'S GENERAL PERMIT MINE	1191-83 SAND/CLAY, TOPSOIL
BROWN #2 BROWN SAND MINE #2	0861-59 SAND

Growth Potential

There is a high potential for residential, commercial, and industrial growth in this watershed, which contains the eastern portion of the greater Greenville area, a portion of the City of Greer, and the Cities of Travelers Rest, Mauldin, Fountain Inn, Simpsonville, and Woodruff. The expansion of the Greenville-Spartanburg Airport and highway improvements around the airport and connecting Greenville to the City of Greer and on to the City of Spartanburg will stimulate continued industrial growth between S.C. Hwy. 101, S.C. Hwy. 417, the Enoree River, and S.C. Hwy. 14. Future industrial development will be prevalent along I-385. The City of Woodruff should also experience industrial, commercial, and residential growth.

The area to the north of the City of Greenville is effectively excluded from development by residing in the Paris Mountain State Park. Through the initiative of the Friends of Paris Mountain, the Greenville Water System has recently donated an additional 260 additional acres to the Park Service. This urban wilderness area is limited to low-impact uses (hiking and trailside camping).

Watershed Protection and Restoration Strategies

Total Maximum Daily Loads (TMDLs)

A total maximum daily load (TMDL) for fecal coliform has been developed for Brushy Creek, a tributary of the Enoree River, which flows through the City of Greenville. Levels of fecal coliform bacteria can be elevated in water bodies as the result of both point and nonpoint sources of pollution. Between 1991 and 1995, 95% of the samples collected at station BE-035 and 70% of samples collected at station BE-009 exceeded the 400 colonies/100ml standard. Targeting urban land for reduction of bacteria is the most effective strategy for this watershed.

A target level of bacteria of 175 colonies/100ml was established. This translates to an urban bacteria-loading reduction of 73% at BE-009 and an urban bacteria-loading reduction of 89% at BE-035.

Forested lands are not targeted for reduction, as there are currently no acceptable means of reducing fecal coliform sources within that land use.

There are several tools available for implementing this TMDL, including Nonpoint Source (NPS) pollution outreach activities and materials and coverage under Greenville County's stormwater permit. SCDHEC will continue to monitor water quality in Brushy Creek to evaluate the effectiveness of these measures.

Funding for TMDL implementation activities is currently available. For more information, see the Bureau of Water web page www.scdhec.net/water or call the Watershed Program at (803) 898-4300.

Special Projects

Urban Watershed Protection and Enhancement through Stewardship and Education

The objective of this project, funded by a USEPA Section 319 grant of the Clean Water Act and currently being implemented by Clemson University, is to develop stewardship of urban-rural watersheds located in two major metropolitan areas of northwestern South Carolina. Princess Creek in Greenville County and Lawsons Fork Creek in Spartanburg County are targeted for the project efforts. Fecal coliform bacteria is a major concern in both watersheds. Sources of fecal coliform bacteria may be traced

to mini-farms, faulty septic systems, wild animals, or improper housing and management of family pets. It may also enter creeks when the capacity of municipal waste treatment facilities is exceeded. Exceeding treatment capacity may be due to major rainfall events adding water to the system or when population growth and waste input exceeds waste treatment capacity. This occurs in watersheds that experience rapid urban, suburban, and rural development such as the Upstate region of South Carolina.

The strategy is to develop a grass roots movement in watersheds where none presently exists, educate stakeholders and managers on water quality protection and proper watershed management. Specifically, the strategy has a monitoring program and several Community Involvement and Education objectives. Volunteer stream monitoring teams will be developed to foster stewardship in targeted watersheds. Stream teams will be developed from area schools where programs like Adopt-a Stream will be made available. Existing civic, environmental groups, and other interested citizen groups will be provided presentations to develop stewardship interests. Educational materials will be developed for the specific areas of concern that were defined by the monitoring program, and will include Farm/Home-a-Syst type materials for pollution prevention. The Stewardship group, with the direction of the lead contact and the assistance of NRCS and Conservation District personnel, will develop a community water quality newsletter, and provide water quality educational materials at existing river/water fairs and city festivals.

Scale Effects on Chemical Flux and Fecal Coliform Counts in the Enoree River Watershed

A project currently underway by Furman University is monitoring water quality in the upper Enoree River basin over a period of three years, and at different points within the watershed, to determine the effects of spatial and temporal scale, land use patterns, and landscape configuration on water quality. To assess this, several watersheds of varying size (3 km² to 1150 km²) and reflecting various land uses are being sampled on a weekly or biweekly basis. Monitoring sites include two existing USGS gauging stations and an additional one that drains to Mountain Lake in Paris Mountain State Park.

Previous work suggests that watershed scale plays an important role in variations in water quality, but few studies have connected multiple water quality factors across several spatial and temporal scales. Correlation of land use, water quality change, and spatial-temporal scale may distinguish between sources of solutes and bacteria and the times of year that they are most prevalent. Such results would be important for determining how to best manage water quality.

The results of the study will be disseminated at the Roper Mountain Science Center's summer science teacher workshops in Greenville and neighboring counties. The data will also be used in various science classes at Furman University.

03050108-020

(Enoree River)

General Description

Watershed 03050108-020 is located in Spartanburg, Laurens, and Union Counties and consists primarily of the **Enoree River** and its tributaries from Beaverdam Creek to Duncan Creek. The watershed occupies 83,425 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Wilkes series. The erodibility of the soil (K) averages 0.25, and the slope of the terrain averages 18%, with a range of 2-45%. Land use/land cover in the watershed includes: 81.7% forested land, 11.4% scrub/shrub land, 5.5% agricultural land, 0.9% urban land, 0.4% barren land, and 0.1% water.

This segment of the Enoree River accepts drainage from its upstream reach, together with the Beaverdam Creek Watershed, Twomile Creek (Hannah Creek), Buckhead Creek, the Warrior Creek Watershed, Enoree Creek, and Cedar Shoals Creek. Elishas Creek enters the river next followed by Frenchman Creek, Johns Creek (Wildcat Branch), Sispring Branch, and Hills Creek. There are several ponds (totaling 66.5 acres) and a total of 181.9 stream miles in this watershed, all classified FW. The lower portion of the watershed resides within the Sumter National Forest.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-041	P	FW	ENOREE RIVER AT SC 49, SE OF WOODRUFF
B-785	BIO	FW	CEDAR SHOALS CK AT UNNAMED RD 0.2 KM ABOVE CONFL.W/ENOREE R.
B-053	W	FW	ENOREE RIVER AT SC 72, 121, & US 176, 1 MI NE WHITMIRE

Enoree River - There are two monitoring sites along this section of the Enoree River. At the furthest upstream site (**B-041**), aquatic life uses are not supported due to occurrences of zinc in excess of the aquatic life acute standards, including a very high concentration of zinc in 1996. A very high concentration of chromium was measured in water in 1998 and a very high concentration of cadmium was measured in 1999. There is also a significant decreasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions. At the downstream site (**B-053**), aquatic life uses are fully supported. Recreational uses are not supported due to fecal coliform bacteria excursions.

Cedar Shoals Creek (B-785) - Aquatic life uses are fully supported based on macroinvertebrate community data.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION</i>
ENOREE RIVER RIVERDALE MILLS W&S DISTRICT PIPE #: 001 FLOW: 0.09 WQL FOR BOD5,DO,TRC,NH3N	SC0035734 MINOR DOMESTIC WATER QUALITY
ENOREE RIVER WR GRACE/SUMMER MINE PIPE #: 001 FLOW: M/R	SCG730001 MINOR INDUSTRIAL EFFLUENT
ENOREE RIVER TOWN OF WHITMIRE WTP PIPE #: 001 FLOW: M/R	SCG645046 MINOR DOMESTIC EFFLUENT
ENOREE CREEK CAROLINA VERMICULITE PIPE #: 001 FLOW: M/R	SCG730013 MINOR INDUSTRIAL EFFLUENT
ENOREE CREEK WR GRACE/DESHIELDS 1&2 MINE PIPE #: 001 FLOW: M/R	SCG730092 MINOR INDUSTRIAL EFFLUENT
BUCKHEAD CREEK WR GRACE/ROPER MINE PIPE #: 001 FLOW: M/R	SCG730089 MINOR INDUSTRIAL EFFLUENT
BUCKHEAD CREEK TRIBUTARY WR GRACE/KEARNEY MILL SITE PIPE #: 001 FLOW: M/R	SC0045811 MINOR INDUSTRIAL EFFLUENT

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
MILLIKEN & CO. – ENTERPRISE PLANT INDUSTRIAL	422433-1601 (SCD000824862) -----
NATIONAL STARCH INDUSTRIAL	IWP-107 (SCD070364922) CLOSED
NATIONAL STARCH INDUSTRIAL	IWP-146 (SCD070364922) CLOSED

Mining Activities

<i>MINING COMPANY MINE NAME</i>	<i>PERMIT # MINERAL</i>
CAROLINA VERMICULITE NUMBER 8 MINE	1034-59 VERMICULITE
CAROLINA VERMICULITE BROWN #2 MINE	0623-83 VERMICULITE
WR GRACE & CO. SUMNER MINE	0714-59 VERMICULITE
WR GRACE & CO. WRIGHT #1 & 2	0278-59 VERMICULITE
WR GRACE & CO. DESHIELDS #1 & #2 MINE	1019-83 VERMICULITE ORE
WR GRACE & CO. BOYD-WHITMORE MINE	1118-59 VERMICULITE ORE
CAROLINA VERMICULITE DONNAN #1 MINE	1164-59 VERMICULITE
PATTERSON VERMICULITE CO. PATTERSON #3 MINE	0048-59 VERMICULITE
WR GRACE & CO. SCHUMACHER MINE	0907-83 VERMICULITE
WR GRACE & CO. WATSON MINE	1023-83 VERMICULITE ORE
WR GRACE & CO. GIDEON MINE	0833-83 VERMICULITE
RAY BROWN ENTERPRIZES BROWN MINE #2	0861-83 SAND
CAROLINA VERMICULITE LAURENCE MINE	1048-87 VERMICULITE ORE

Water Supply

<i>WATER USER STREAM</i>	<i>TOTAL PUMP. CAPACITY (MGD) RATED PUMP. CAPACITY (MGD)</i>
CITY OF CLINTON	3.5
ENOREE RIVER	1.7
TOWN OF WHITMIRE	2.2
ENOREE RIVER	1.0

Growth Potential

There is some potential for growth in the upper portion of this watershed near the Town of Enoree, associated with industrial development along U.S. Hwy. 221. The watershed is bisected by I-26 and some growth may be expected around the interstate interchanges. A commercial corridor has developed along U.S. Hwy. 176 and S.C. Hwy. 72 located in the lower region of the watershed, which serves the Whitmire community. Public water is available, but little growth is expected.

03050108-030

(Beaverdam Creek/Warrior Creek)

General Description

Watershed 03050108-030 is located in Laurens County and consists primarily of **Beaverdam Creek and Warrior Creek** and their tributaries. The watershed occupies 35,247 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Madison-Davidson-Pacolet series. The erodibility of the soil (K) averages 0.26, and the slope of the terrain averages 14%, with a range of 2-40%. Land use/land cover in the watershed includes: 56.7% forested land, 20.1% scrub/shrub land, 18.8% agricultural land, 1.8% urban land, 1.6% barren land, and 1.0% water.

Beaverdam Creek flows into the Enoree River near the Town of Enoree and further downstream Warrior Creek enters the river. Beaverdam Creek accepts drainage from Wallace Branch and Warrior Creek accepts drainage from Double Branch and Strouds Branch. There are several ponds and lakes (totaling 342.4 acres) and a total of 64.2 stream miles in this watershed, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-246	W/BIO	FW	BEAVERDAM CREEK AT S-30-97, 7 MI NE OF GRAY COURT
B-150	W	FW	WARRIOR CREEK AT US 221, 8 MI NNE OF LAURENS
B-742	BIO	FW	WARRIOR CREEK AT SC 49

Beaverdam Creek (B-246) - Aquatic life uses are fully supported based on macroinvertebrate community data. Recreational uses are not supported due to fecal coliform bacteria excursions.

Warrior Creek - There are two monitoring sites along Warrior Creek. At the upstream site (**B-150**), aquatic life uses are fully supported. A high concentration of zinc and a very high concentration of cadmium were measured in 1999, and a very high concentration of chromium was measured in 1995. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. At the downstream site (**B-742**), aquatic life uses are fully supported based on macroinvertebrate community data.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM</i>	<i>NPDES#</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
<i>PERMITTED FLOW @ PIPE (MGD)</i>	<i>LIMITATION</i>
<i>COMMENT</i>	
BEAVERDAM CREEK	SCG730055
VULCAN MATERIALS CO./GRAY COURT	MINOR INDUSTRIAL
PIPE #: 001 FLOW: M/R	EFFLUENT

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME</i> <i>FACILITY TYPE</i>	<i>PERMIT #</i> <i>STATUS</i>
SOUTHEASTERN ASSOCIATES - LAURENS INDUSTRIAL	302428-1201 -----

Mining Activities

<i>MINING COMPANY</i> <i>MINE NAME</i>	<i>PERMIT #</i> <i>MINERAL</i>
CAROLINA VERMICULITE CHARLES WALDREP	0970-59 VERMICULITE
VULCAN MATERIALS CO. GRAY COURT QUARRY	0061-59 GRANITE
WR GRACE & CO. F. WALDREP MINE	1022-59 VERMICULITE ORE
WR GRACE & CO. WRIGHT NO. 1 & 2	0278-59 VERMICULITE
WR GRACE & CO. TEMPLETON MINE	1160-59 VERMICULITE
WR GRACE & CO. DAVIS-DEWITT MINE	1018-59 VERMICULITE ORE

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains the Town of Gray Court. I-385 crosses the watershed and some industrial growth may be expected around interstate interchanges.

03050108-040

(Duncan Creek)

General Description

Watershed 03050108-040 is located in Laurens and Newberry Counties and consists primarily of **Duncan Creek** and its tributaries. The watershed occupies 76,743 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Wilkes-Madison-Pacolet series. The erodibility of the soil (K) averages 0.26, and the slope of the terrain averages 16%, with a range of 2-45%. Land use/land cover in the watershed includes: 74.9% forested land, 12.4% scrub/shrub land, 7.1% agricultural land, 4.5% urban land, 0.7% barren land, and 0.4% water.

Duncan Creek originates near the Town of Ora and accepts drainage from Duncan Creek Reservoir 6B (73 acres), Long Branch, Saxton Branch, Beards Fork Creek, Millers Fork (Sand Creek), and Allison's Branch. Beards Fork Creek and Millers Fork enter Duncan Creek near the City of Clinton. Further downstream near the Town of Whitmire, South Fork Duncan Creek (Ned Wesson Branch) enters Duncan Creek followed by Mulberry Branch and Sandy Branch. There are several ponds and lakes (totaling 231.4 acres) and a total of 134.1 stream miles in this watershed, all classified FW. The lower portion of the watershed resides within the Sumter National Forest.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-735	W	FW	DUNCAN CREEK RESERVOIR 6B
B-231	S	FW	BEARDS FORK CREEK AT US 276 (I-385), 3.7 MI NNE OF CLINTON
B-072	P/BIO	FW	DUNCAN CREEK AT US 176, 1.5 MI SE OF WHITMIRE

Duncan Creek (B-072) - Aquatic life uses are fully supported based on macroinvertebrate community data. A very high concentration of zinc was measured in 1995 and a very high concentration of chromium was measured in 1997. Recreational uses are not supported due to fecal coliform bacteria excursions.

Duncan Creek Reservoir 6B (B-735) - Duncan Creek Reservoir 6B is a 73-acre impoundment near the headwaters of an unnamed tributary to Duncan Creek near the top of the watershed in Laurens County. The maximum depth is approximately 15 feet (4.5 m) and the average depth is 5.4 feet (1.7 m). The reservoir's watershed comprises approximately 0.8 square miles (2 km²). Aquatic life uses are partially supported due to pH excursions. Recreational uses are fully supported.

Beards Fork Creek (B-231) - Aquatic life uses are not supported due to dissolved oxygen excursions. There is also a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters. Recreational uses are fully supported; however, there is a significant increasing trend in fecal coliform bacteria concentration.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM

FACILITY NAME

PERMITTED FLOW @ PIPE (MGD)

COMMENT

NPDES#

TYPE

LIMITATION

DUNCAN CREEK
TOWN OF WHITMIRE
PIPE #: 001 FLOW: 0.6 (PHASE I)
PIPE #: 001 FLOW: 1.0 (PHASE II)
WQL FOR TRC

SC0022390
MINOR DOMESTIC
WATER QUALITY
WATER QUALITY

DUNCAN CREEK
WR GRACE/BALL MINE
PIPE #: 001 FLOW: M/R

SCG730029
MINOR INDUSTRIAL
EFFLUENT

BEARDS FORK CREEK
CLINTON MILLS/BAILEY PLT
PIPE #: 001 FLOW: 0.101
PIPE #: 002 FLOW: M/R

SCG250146
MINOR INDUSTRIAL
EFFLUENT
EFFLUENT

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME

FACILITY TYPE

PERMIT #

STATUS

CLINTON MILLS - BAILEY PT
DOMESTIC

DWP-019 (SCD0033415575)
CLOSED

CITY OF CLINTON
DOMESTIC

301002-1201(DWP-914)
CLOSED (SCD002394104)

CITY OF CLINTON
DOMESTIC

DWP-026
CLOSED

LAURENS COUNTY SW TRANSFER STA.
DOMESTIC

302401-6001

LAWNDALE MOBILE HOMES
INDUSTRIAL

IWP-101

Mining Activities

MINING COMPANY

MINE NAME

PERMIT #

MINERAL

WR GRACE & CO.
GOODWIN MINE

0692-59
VERMICULITE

WR GRACE & CO.
BALL MINE

0748-59
VERMICULITE

WR GRACE & CO.
BLAKELY MINE

1166-59
VERMICULITE CRUDE ORE

WR GRACE & CO.
LEONARD MINE

0835-59
VERMICULITE

WR GRACE & CO.
COOPER #1 & #2

1064-59
VERMICULITE ORE

Water Supply

***WATER USER
STREAM***

***TOTAL PUMP. CAPACITY (MGD)
RATED PUMP. CAPACITY (MGD))***

CITY OF CLINTON
DUNCAN CREEK

3.5
1.7

TOWN OF WHITMIRE
DUNCAN CREEK

1.0
1.0

Growth Potential

There is a high potential for industrial growth in this watershed, which contains the City of Clinton and portions of the Cities of Whitmire and Laurens. I-26 and I-385 intersect near Clinton and future industrial development will be prevalent along I-385 to the area south of Clinton.

03050108-050

(Enoree River)

General Description

Watershed 03050108-050 is located in Newberry and Laurens Counties and consists primarily of the **Enoree River** and its tributaries from Duncan Creek to its confluence with the Broad River. The watershed occupies 105,272 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Pacolet-Wilkes series. The erodibility of the soil (K) averages 0.25, and the slope of the terrain averages 13%, with a range of 2-40%. Land use/land cover in the watershed includes: 86.2% forested land, 6.2% agricultural land, 6.1% scrub/shrub land, 1.0% urban land, 0.2% barren land, 0.2% forested wetland, and 0.1% water.

This segment of the Enoree River accepts drainage from its upstream reaches, together with Sulphur Spring Branch, Collins Branch, and Indian Creek. Indian Creek originates near the Town of Joanna and accepts drainage from Fort Branch, Loftons Branch, Locust Branch, Long Branch (Buncombe Branch), Headleys Creek (Peges Creek), Pattersons Creek, Asias Branch, Gilders Creek (Johns Mountain Branch, Joshuas Branch), and Hunting Creek. South Fork Kings Creek (Little Kings Creek, Means Branch) enters the river near the City of Newberry followed by Fosters Branch, Quarters Branch, and Subers Creek. There are several ponds and lakes (totaling 56.5 acres) and a total of 183.1 stream miles in this watershed, all classified FW. The entire watershed resides within the Sumter National Forest and the Enoree River Waterfowl Area is located near the confluence with the Broad River.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-071	BIO	FW	INDIAN CREEK AT US 176
B-799	BIO	FW	KINGS CREEK AT US 176, DOWNSTREAM OF BRIDGE
B-054	P	FW	ENOREE RIVER AT S-36-45, 3.5 MI ABOVE CONFLUENCE WITH BROAD R.

Enoree River (B-054) – Aquatic life uses are not supported due to occurrences of chromium in excess of the aquatic life acute standards, including very high concentrations of chromium measured once each in 1996 and 1999. A significant decreasing trend in dissolved oxygen concentrations and significant increasing trends in five-day biochemical oxygen demand and turbidity suggest degrading conditions for these parameters. In water, diethyl phthalate was measured in 1997. In sediments, di-n-octylphthalate and di-n-butylphthalate were measured in 1995 and bis(2-ethylhexyl)phthalate was measured in 1997. Recreational uses are not supported due to fecal coliform bacteria excursions.

Kings Creek (B-799) – Aquatic life uses are fully supported based on macroinvertebrate community data.

Indian Creek (B-071) - Aquatic life uses are fully supported based on macroinvertebrate community data.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM

FACILITY NAME

PERMITTED FLOW @ PIPE (MGD)

COMMENT

NPDES#

TYPE

LIMITATION

HEADLEYS CREEK

JOANNA KOA

PIPE #: 001 FLOW: 0.010

WQL FOR BOD5,DO,TRC,NH3N

SC0024732

MINOR DOMESTIC

WATER QUALITY

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME

FACILITY TYPE

PERMIT #

STATUS

SHAKESPEARE LANDFILL - NEWBERRY

INDUSTRIAL

IWP-159

Growth Potential

There is a low potential for growth in this watershed, which contains the Town of Joanna. The watershed is effectively excluded from development by residing in the Sumter National Forest.

Tyger River Basin Description

The **Tyger River Basin** encompasses 807.9 square miles extending across the Piedmont region of the State. The Tyger River encompasses 6 watersheds and 517,056 acres, of which 67.1% is forested land, 13.7% is agricultural land, 9.9% is urban land, 8.1% is scrub/shrub land, 0.7% is water, and 0.5% is barren land. The urban land percentage is comprised chiefly of the City of Greer and portions of the Cities of Spartanburg and Union. There are approximately 937.9 stream miles and 2,889.1 acres of lake waters in the Tyger River Basin. The Tyger River is formed by the confluence of the South Tyger River, the Middle Tyger River, and the North Tyger River near the City of Woodruff and accepts drainage from Fairforest Creek before flowing into the Broad River.

Physiographic Regions

The State of South Carolina has been divided into six Major Land Resource Areas (MLRAs) by the USDA Soil Conservation Service. The MLRAs are physiographic regions that have soils, climate, water resources, and land uses in common. The physiographic region that defines the Tyger River Basin is as follows:

The **Piedmont** is an area of gently rolling to hilly slopes with narrow stream valleys dominated by forests, farms, and orchards; elevations range from 375 to 1,000 feet.

Land Use/Land Cover

General land use/land cover data for South Carolina was derived from SCDNR 1990 SPOT multispectral satellite images using image mapping software to inventory the State's land classifications, which are as follows.

Urban land is characterized by man-made structures and artificial surfaces related to industrial, commercial, and residential uses, as well as vegetated portions of urban areas.

Agricultural/Grass land is characterized by cropland, pasture, and orchards and may include some grass cover in urban, scrub/shrub, and forest areas.

Scrub/Shrub land is adapted from the western Rangeland classification to represent the "fallow" condition of the land (currently unused, yet vegetated), and is most commonly found in the dry Sandhills region including areas of farmland, sparse pines, regenerating forest lands, and recently harvested timber lands.

Forest land is characterized by deciduous and evergreen trees not including forests in wetland settings.

Forested Wetland (swampland) is the saturated bottomland, mostly hardwood forests that are primarily composed of wooded swamps occupying river floodplains and isolated low-lying wet areas, primarily located in the Coastal Plain.

Nonforested Wetland (marshland) is dependent on soil moisture to distinguish it from scrub/shrub since both classes contain grasses and low herbaceous cover; nonforested wetlands are most common along the coast and isolated freshwater areas found in the Coastal Plain.

Barren land is characterized by an unvegetated condition of the land, both natural (rock, beaches and unvegetated flats) and man-induced (rock quarries, mines, and areas cleared for construction in urban areas or clearcut forest).

Water (non-land) includes both fresh and tidal waters.

Soil Types

The dominant soil associations, or those soil series comprising, together, over 40% of the land area, were recorded for each watershed in percent descending order. The individual soil series for the Tyger River Basin are described as follows.

Cataula soils are deep, gently sloping to strongly sloping, well drained soils with a loamy surface layer and a clayey subsoil.

Cecil soils are deep, well drained, gently sloping to sloping soils that have red subsoil.

Davidson soils are deep, gently sloping to strongly sloping, well drained to somewhat poorly drained soils with a loamy surface layer and a clayey subsoil.

Enon soils are well drained to somewhat poorly drained, shallow to deep soils, mainly brownish, firm to extremely firm clay loam to clay in the subsoil, on narrow and medium ridges.

Madison soils are well drained, moderately sloping soils, with clayey subsoil, moderately deep.

Pacolet soils are well drained, moderately steep soils with clayey subsoil, moderately deep.

Wilkes soils are dominantly strongly sloping to steep, well-drained soils.

Slope and Erodibility

The definition of soil erodibility differs from that of soil erosion. Soil erosion may be more influenced by slope, rainstorm characteristics, cover, and land management than by soil properties. Soil erodibility refers to the properties of the soil itself, which cause it to erode more or less easily than others when all other factors are constant.

The soil erodibility factor, K, is the rate of soil loss per erosion index unit as measured on a unit plot, and represents an average value for a given soil reflecting the combined effects of all the soil properties that significantly influence the ease of soil erosion by rainfall and runoff if not protected. The K values closer to 1.0 represent higher soil erodibility and a greater need for best management practices to minimize erosion and contain those sediments that do erode. The range of K-factor values in the Tyger River Basin is from 0.24 to 0.29.

Fish Consumption Advisory

At the time of publication, there are no fish consumption advisories in the Tyger River Basin. Fish consumption advisories are updated annually in March. For background information and the most current advisories please visit the Bureau of Water homepage at <http://www.scdhec.net/water> and click on "Advisories". For more information or a hard copy of the advisories, call SCDHEC's Division of Health Hazard Evaluation toll-free at (888) 849-7241.

Climate

Normal yearly rainfall in the Tyger River Basin area is 49.41 inches, according to the S.C. historic climatological record. Data compiled from National Weather Service stations in Greenville-Spartanburg WSO Airport, Spartanburg 3E, Woodruff, Union 8SW, and Whitmire 2NE were used to determine the general climate information for this portion of the State. The highest level of rainfall occurs in the spring with 13.66 inches; 12.60, 10.52, and 12.63 inches of rain falls in the summer, fall, and winter, respectively. The average annual daily temperature is 60.8EF. Spring temperatures average 59.6EF and summer, fall, and winter temperatures are 76.7EF, 60.8EF, and 46.3EF, respectively.

Watershed Evaluations

03050107-010

(South Tyger River)

General Description

Watershed 03050107-010 is located in Greenville and Spartanburg Counties and consists primarily of the **South Tyger River** and its tributaries. The watershed occupies 110,015 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Cataula series. The erodibility of the soil (K) averages 0.29, and the slope of the terrain averages 8%, with a range of 2-25%. Land use/land cover in the watershed includes: 59.2% forested land, 20.4% agricultural land, 9.7% urban land, 8.1% scrub/shrub land, 1.5% water, and 1.1% barren land.

Mush Creek (Johnson Creek, Dysort Lake, Meadow Fork), Barton Creek (McKinney Creek also known as Burban Fork Creek, Noe Creek), and Pax Creek join to form the South Tyger River near Pax Mountain. Just downstream of the confluence the South Tyger River is impounded to form Lake Robinson. Downstream of Lake Robinson, the South Tyger River is joined by Beaverdam Creek and forms Lake Cunningham (Clear Creek). Downstream from Lake Cunningham near the City of Greer, the river accepts drainage from Frohawk Creek, Wards Creek, and Maple Creek. The river then flows through Berrys Pond (60 acres) and accepts drainage from 58 acre-Silver Lake (Williams Creek), Brushy Creek (Powder Branch), Bens Creek, Chickenfoot Creek, and Ferguson Creek (Quarter Creek, Big Ferguson Creek, Little Ferguson Creek). There are several ponds and lakes (totaling 1,503.9 acres) and a total of 201.9 stream miles in this watershed, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-317	P	FW	MUSH CREEK AT SC 253, BELOW TIGERVILLE
B-741	BIO	FW	SOUTH TYGER RIVER AT UNNUMBERED ROAD, S OF S-23-569
CL-100	W	FW	LAKE ROBINSON IN FOREBAY NEAR DAM
B-341	W	FW	LAKE CUNNINGHAM IN FOREBAY NEAR DAM
B-149	S	FW	SOUTH TYGER RIVER AT SC 14, 2.9 MI NNW OF GREER
B-263	S	FW	SOUTH TYGER RIVER AT SC 290, 3.7 MI E OF GREER
B-625	BIO	FW	MAPLE CREEK AT SR 644
B-005A	BIO	FW	SOUTH TYGER RIVER AT S-42-242
B-005	S	FW	SOUTH TYGER RIVER AT S-42-63
B-782	BIO	FW	BENS CREEK AT SC 417
B-332	W	FW	SOUTH TYGER RIVER AT S-42-86, 5 MI NE OF WOODRUFF
B-787	BIO	FW	FERGUSON CREEK AT SR 86

South Tyger River - There are six monitoring sites along the South Tyger River. At the furthest upstream site (**B-741**), aquatic life uses are fully supported based on macroinvertebrate community data. At the next site downstream (**B-149**), aquatic life uses are fully supported; however, there are significant decreasing trends in dissolved oxygen concentrations and pH. Significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters.

Recreational uses are fully supported at this site. Aquatic life uses are fully supported further downstream (**B-263**); however, there is a significant decreasing trend in pH and significant increasing trends in total phosphorus concentration and turbidity. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions.

Continuing downstream (**B-005A**), aquatic life uses are partially supported based on macroinvertebrate community data. At the next site downstream (**B-005**), aquatic life uses are fully supported, although there is a significant decreasing trend in pH and significant increasing trends in total phosphorus concentration and turbidity. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. At the furthest downstream site (**B-332**), although there were some zinc excursions and one high concentration in 1995, aquatic life uses are fully supported based on macroinvertebrate community data. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Mush Creek (B-317) - Aquatic life uses are fully supported. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

Lake John Robinson (CL-100) - Lake Robinson is an 802-acre impoundment on the South Tyger River in Greenville County, with a maximum depth of approximately 40 feet (12.3 m) and an average depth of approximately 18 feet (5.4 m). Lake Robinson's watershed comprises 47 square miles (123 km²). Aquatic life uses are partially supported due to pH excursions. Recreational uses are fully supported.

Lake Cunningham (B-341) - Lake Cunningham is a 250-acre impoundment on the South Tyger River in Greenville County, with a maximum depth of approximately 19 feet (5.8 m) and an average depth of 8.9 feet (2.7 m). Lake Cunningham's watershed comprises approximately 48 square miles (124 km²), and includes Lake John Robinson. Aquatic life and recreational uses are fully supported.

Maple Creek (B-625) - Aquatic life uses are fully supported based on macroinvertebrate community data.

Bens Creek (B-782) - Aquatic life uses are fully supported based on macroinvertebrate community data.

Ferguson Creek (B-787) - Aquatic life uses are fully supported based on macroinvertebrate community data.

Natural Swimming Areas

***FACILITY NAME
RECEIVING STREAM***

***PERMIT #
STATUS***

LOOK UP LODGE
BURBAN FORK CREEK

23-N14
ACTIVE

NPDES Program

Active NPDES Facilities

***RECEIVING STREAM
FACILITY NAME
PERMITTED FLOW @ PIPE (MGD)***

***NPDES#
TYPE
LIMITATION***

SOUTH TYGER RIVER
SSSD/S. TYGER REGIONAL WWTP
PIPE #:001 FLOW: 1.0-2.0
WQL FOR TRC

SC0047732
MAJOR DOMESTIC
WATER QUALITY

SOUTH TYGER RIVER
LAKEVIEW STEAK HOUSE
PIPE #: 001 FLOW: 0.0158

SC0030465
MINOR DOMESTIC
EFFLUENT

SOUTH TYGER RIVER
MEMC ELECTRONIC MATERIALS
PIPE #: 001 FLOW: 0.9
WQL FOR TRC; NOT OPERATING

SC0036145
MAJOR INDUSTRIAL
WATER QUALITY

SOUTH TYGER RIVER
CITY OF GREER CPW WTP
PIPE #: 001 FLOW: M/R
PIPE #: 002 FLOW: M/R
WQL FOR TRC

SCG645020
MINOR DOMESTIC
WATER QUALITY
WATER QUALITY

SOUTH TYGER RIVER
SSSD/RIVER FALLS PLANTATION
PIPE #: 001 FLOW: 0.07
NOT OPERATING

SC0043524
MINOR DOMESTIC
EFFLUENT

SOUTH TYGER RIVER
CITY OF GREER/MAPLE CREEK PLT
PIPE #: 001 FLOW: 3.0 (PHASE I)
PIPE #: 001 FLOW: 4.5 (PHASE II)
WQL FOR DO,TRC,NH3N

SC0046345
MAJOR DOMESTIC
WATER QUALITY
WATER QUALITY

WARDS CREEK
KOCH MATERIALS CO.
PIPE #: 001, 002 FLOW: M/R

SC0048003
MINOR INDUSTRIAL
EFFLUENT

BEAVERDAM CREEK
HANSON AGGREGATES/SANDY FLATS
PIPE #: 001 FLOW: M/R

SCG730079
MINOR INDUSTRIAL
EFFLUENT

BURBAN FORK CREEK
LOOK UP LODGE/PM UTILITIES INC.
PIPE #: 001 FLOW: 0.03
WQL FOR TRC,NH3N

SC0026379
MINOR DOMESTIC
WATER QUALITY

MEADOW FORK
UNITED UTIL./NORTH GREENVILLE COLLEGE
PIPE #: 001 FLOW: 0.04
WQL FOR TRC,NH3N

SC0026565
MINOR DOMESTIC
WATER QUALITY

WILLIAMS CREEK
CARMET COMPANY
PIPE #: 001 FLOW: 0.009
PIPE #: 002 FLOW: 0.057
WQL FOR DO,TRC,NH3N

SC0038083
MINOR INDUSTRIAL
WATER QUALITY
WATER QUALITY

WILLIAMS CREEK
MILLIKEN/ARMITAGE PLT
PIPE #: 001 FLOW: 0.36
WQL FOR TRC,NH3N

SC0023451
MINOR INDUSTRIAL
WATER QUALITY

WILLIAMS CREEK TRIBUTARY
US ALUMOWELD CO., INC.
PIPE #: 001 FLOW: 0.003
WQL FOR NH3N,TRC

SC0043982
MINOR INDUSTRIAL
WATER QUALITY

Nonpoint Source Management Program

Camp Facilities

FACILITY NAME/TYPE
RECEIVING STREAM

PERMIT #
STATUS

LOOK UP LODGE/RESIDENT
BURBAN FORK CREEK

23-305-0116
ACTIVE

Land Disposal Activities

Landfill Facilities

LANDFILL NAME
FACILITY TYPE

PERMIT #
STATUS

BLUE RIDGE LANDFILL
DOMESTIC

DWP-071 (SCD987581329)
CLOSED

BLUE RIDGE LANDFILL
DOMESTIC

DWP-082 (SCD987581329)
CLOSED

GODFREY LANDFILL
INDUSTRIAL

IWP-225
CLOSED

GLENN SHORT TERM C&D LANDFILL
C&D

232903-1301

WING QUARRY C&D LANDFILL
C&D

232644-1201

BROOKWOOD DRIVE LANDFILL

232900-1301

RHEM GRADING

422900-1302

CITY OF GREER
DOMESTIC

231003-6001

Land Application Sites

LAND APPLICATION SYSTEM
FACILITY NAME

ND#
TYPE

SPRAYFIELD
RD ANDERSON APPLIED TECH. CTR.

ND0067351
DOMESTIC

Mining Activities

MINING COMPANY
MINE NAME

PERMIT #
MINERAL

DAVIDSON MINERAL PROPERTIES, INC.
SANDY FLAT QUARRY

0502-45
GRANITE

WR GRACE & CO.
TIGER MINE

1140-45
VERMICULITE

Water Supply

WATER USER
STREAM

TOTAL PUMP. CAPACITY (MGD)
RATED PUMP. CAPACITY (MGD)

CITY OF GREER CPW
LAKE CUNNINGHAM

23.0
18.0

Growth Potential

There is a high potential for industrial, commercial, and residential growth in this watershed, which contains the City of Greer, and portions of the Town of Duncan and the City of Woodruff. The Greenville-Spartanburg Airport expansion, the development of the BMW automotive plant, and highway improvements in the area surrounding the BMW plant will stimulate continued growth. Growth is also expected around the I-85 and U.S. Hwy. 29 corridors, which connect the Cities of Greenville, Greer, and Spartanburg. The Town of Duncan is expected to serve as a bedroom community for the Greer-Spartanburg area.

03050107-020

(North Tyger River)

General Description

Watershed 03050107-020 is located in Spartanburg County and consists primarily of the upper *North Tyger River* and its tributaries. The watershed occupies 22,375 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Cataula series. The erodibility of the soil (K) averages 0.27, and the slope of the terrain averages 12%, with a range of 2-40%.

Land use/land cover in the watershed includes: 53.0% forested land, 27.3% agricultural land, 15.4% urban land, 2.0% water, 1.6% scrub/shrub land, and 0.7% barren land.

Jordan Creek, which was impounded to create Lake Cooley, drains into the North Tyger River along with several unnamed tributaries. There are several ponds and lakes (totaling 214.3 acres) in this watershed used for recreational purposes and 31.9 stream miles, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-348	W	FW	LAKE COOLEY IN FOREBAY NEAR DAM
B-315	S	FW	TRIBUTARY TO N. TYGER RIVER AT ROAD BELOW JACKSON #2 EFFLUENT
B-219	S	FW	NORTH TYGER RIVER AT US 29, 7.2 MI W OF SPARTANBURG

North Tyger River (B-219) - Aquatic life uses are not supported due to occurrences of zinc in excess of the aquatic life acute standards; both high concentrations of zinc were measured in 1995. There are also significant decreasing trends in dissolved oxygen concentration and pH and a significant increasing trend in turbidity. Recreational uses are not supported due to fecal coliform bacteria excursions.

Lake Cooley (B-348) - Lake Cooley is a 330-acre impoundment on Jordan Creek in Spartanburg County, with a maximum depth of approximately 39 feet (12.0 m) and a mean depth of 4.0 feet (1.2 m). Lake Cooley's watershed comprises approximately 10 square miles (27 km²). Aquatic life uses are partially supported due to pH excursions. Recreational uses are fully supported.

Unnamed Tributary to the North Tyger River (B-315) - Aquatic life uses are fully supported. There is a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD)</i>	<i>NPDES# TYPE LIMITATION</i>
NORTH TYGER RIVER SSSD/BUCKEYE FOREST WWTP PIPE #: 001 FLOW: 0.06	SC0000957 MINOR DOMESTIC EFFLUENT
NORTH TYGER RIVER AMERITEX YARN/SPARTANBURG PLT PIPE #: 001 FLOW: M/R	SCG250147 MINOR INDUSTRIAL EFFLUENT
NORTH TYGER RIVER LEIGH FIBERS, INC. PIPE #: 001 FLOW: M/R	SCG250170 MINOR INDUSTRIAL EFFLUENT
LAKE COOLEY VULCAN MATERIALS CO./LYMAN QUARRY PIPE #: 001 FLOW: M/R	SCG730056 MINOR INDUSTRIAL EFFLUENT
NORTH TYGER TRIBUTARY JACKSON MILLS/WELLFORD PLT PIPE #: 001 FLOW: 0.05 WQL FOR DO,TRC,NH3N	SC0001716 MINOR DOMESTIC WATER QUALITY

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
WELLFORD LANDFILL DOMESTIC	DWP-078 (421001-1101) ACTIVE
OLD WELLFORD LANDFILL DOMESTIC	DWP-012 CLOSED
SPARTANBURG COUNTY C&D LANDFILL C&D LANDFILL	421001-1201 -----
SPARTANBURG COUNTY LANDFILL DOMESTIC	421001-1202 -----
MESSER MIRROR LANDFILL INDUSTRIAL	IWP-196 -----

Mining Activities

<i>MINING COMPANY MINE NAME</i>	<i>PERMIT # MINERAL</i>
VULCAN MATERIAL CO. LYMAN QUARRY	0587-83 GRANITE

Growth Potential

There is a high potential for industrial, commercial, and residential growth in this watershed, which contains the Town of Duncan. The I-85 corridor runs through the watershed connecting the Cities of Greer and Spartanburg. There are also industrial developmental pressures along U.S. Hwy. 29. The Town of Duncan is expected to serve as a bedroom community for the Greer-Spartanburg area.

03050107-030

(North Tyger River)

General Description

Watershed 03050107-030 is located in Spartanburg County and consists primarily of the lower **North Tyger River** and its tributaries. The watershed occupies 33,796 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Davidson-Pacolet-Enon-Cecil series. The erodibility of the soil (K) averages 0.29, and the slope of the terrain averages 8%, with a range of 2-15%. Land use/land cover in the watershed includes: 60.4% forested land, 19.5% urban land, 14.9% agricultural land, 4.9% scrub/shrub land, 0.1% barren land, and 0.2% water.

Frey Creek (Grays Creek) drains into the North Tyger River followed by Jimmies Creek, Cub Branch, Ranson Creek, Tim Creek (Montgomery Pond), and Stillhouse Branch. Further downstream the river flows through Ott Shoals and accepts drainage from Wards Creek (Tanyard Branch), Tin Roof Branch, Johnson Branch (Big Branch), and Thomas Branch. There are several ponds and lakes (totaling 34.3 acres) in this watershed used for recreational purposes and 70.3 stream miles, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-017	BIO	FW	NORTH TYGER RIVER AT SC 296
B-018A	S	FW	NORTH TYGER RIVER AT S-42-231, 11 MI S OF SPARTANBURG

North Tyger River - There are two monitoring sites along this section of the North Tyger River. At the upstream site (**B-017**), aquatic life uses are fully supported based on macroinvertebrate community data. At the downstream site (**B-018A**), aquatic life uses are fully supported; however, there is a significant decreasing trend in dissolved oxygen concentration and a significant increasing trend in total phosphorus concentration. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD)	NPDES# TYPE LIMITATION
NORTH TYGER RIVER SSSD/NORTH TYGER RIVER PIPE #: 001 FLOW: 1.0 (PHASE I) PIPE #: 001 FLOW: 2.0 (PHASE II) WQL FOR BOD5,DO,TRC,NH3N TO BE ELIMINATED (TIED INTO SSSD/LOWER N. TYGER R. WWTP)	SC0043532 MAJOR DOMESTIC WATER QUALITY WATER QUALITY
NORTH TYGER RIVER SSSD/LOWER N. TYGER RIVER WWTP PIPE #: 001 FLOW: 0.5 PIPE #: 001 FLOW: 2.5 (PHASE II) WQL FOR TRC	SC0048143 MINOR DOMESTIC WATER QUALITY WATER QUALITY

NORTH TYGER RIVER TRIBUTARY ABCO INDUSTRIES LTD. PIPE #: 001 FLOW: 0.036	SC0002321 MAJOR INDUSTRIAL EFFLUENT
TIM CREEK SSSD/ROEBUCK MIDDLE SCHOOL PIPE #: 001 FLOW: 0.022 WQL FOR DO,TRC,NH3N	SC0037532 MINOR DOMESTIC WATER QUALITY
TIM CREEK SSSD/TIM CREEK WWTP PIPE #: 001 FLOW: 0.03 WQL FOR TRC,NH3N TO BE ELIMINATED (TIED INTO SSSD/LOWER N. TYGER R. WWTP)	SC0041491 MINOR DOMESTIC WATER QUALITY
JIMMIES CREEK SYBRON CHEMICALS INC. PIPE #: 001 FLOW: 0.36 WQL FOR DO	SCG250194 MINOR INDUSTRIAL WATER QUALITY
RANSON CREEK MADERA SD PIPE #: 001 FLOW: 0.076 WQL FOR DO,TRC,NH3N	SC0021687 MINOR DOMESTIC WATER QUALITY
RANSON CREEK TRIBUTARY LINVILLE HILLS SD/PALMETTO UTIL. PIPE #: 001 FLOW: 0.12 WQL FOR DO,TRC,NH3N	SC0034169 MINOR DOMESTIC WATER QUALITY
FREY CREEK MIDWAY PARK WWTP PIPE #: 001 FLOW: 0.015 WQL FOR TRC	SC0030571 MINOR DOMESTIC WATER QUALITY

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME</i> <i>FACILITY TYPE</i>	<i>PERMIT #</i> <i>STATUS</i>
PALMETTO LANDFILL DOMESTIC	422401-1101 ACTIVE
PALMETTO LANDFILL DOMESTIC	DWP-092 ACTIVE
TINDAL CONCRETE SPECIAL WASTE LANDFILL INDUSTRIAL	423340-1601 ACTIVE

Mining Activities

<i>MINING COMPANY</i> <i>MINE NAME</i>	<i>PERMIT #</i> <i>MINERAL</i>
KING ASPHALT ANDERSON MINE	1213-83 RIVER SAND

Growth Potential

There is a high potential for growth in this watershed, which contains portions of the Town of Duncan and the City of Spartanburg. I-26 and I-85 bisect the watershed and growth is expected around the major highway interchanges, along with industrial developmental pressures along U.S. Hwy. 29 and U.S. Hwy. 221. The Cities of Greer and Spartanburg are connected via the I-85 corridor, and the Town of Duncan is expected to serve as a bedroom community for the Greer-Spartanburg area. The City of Spartanburg is building regional treatment facilities, which should provide for future growth.

03050107-040
(Middle Tyger River)

General Description

Watershed 03050107-040 is located in Greenville and Spartanburg Counties and consists primarily of the **Middle Tyger River** and its tributaries. The watershed occupies 54,597 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil series. The erodibility of the soil (K) averages 0.28, and the slope of the terrain averages 8%, with a range of 2-15%. Land use/land cover in the watershed includes: 63.2% forested land, 22.0% agricultural land, 11.0% urban land, 1.9% scrub/shrub land, 1.1% water, and 0.8% barren land.

The Middle Tyger River accepts drainage from Campbell Creek, Beaverdam Creek (Barnes Creek), and Spencer Creek before flowing into Lyman Lake (Meadow Creek). Downstream of Lyman Lake, another Beaverdam Creek (Foyster Creek, Thompson Branch, Berrys Millpond, Silver Lake) flows into the river followed by Twin Lakes much further downstream. There are numerous ponds and lakes (totaling 578.7 acres) and a total of 97.2 stream miles in this watershed, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-794	BIO	FW	MIDDLE TYGER RIVER AT RED TURNER RD, 0.5 MI E. OF SC 101
B-148	P/BIO	FW	MIDDLE TYGER RIVER AT SC 14, 2 MI SSW GOWANSVILLE
B-784	BIO	FW	BEAVERDAM CREEK AT SC 357
B-012	S	FW	MIDDLE TYGER RIVER AT S-42-63
B-014	W/BIO	FW	MIDDLE TYGER RIVER AT S-42-64

Middle Tyger River – There are four monitoring sites along this section of the North Tyger River. At the furthest upstream site (**B-794**), aquatic life uses are fully supported based on macroinvertebrate community data. Aquatic life uses are fully supported at the next site downstream (**B-148**) based on macroinvertebrate community data and physical/chemical data; however, there is a significant increasing trend in turbidity. A significant increasing trend in dissolved oxygen concentration and significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. A very high concentration of zinc was measured in water in 1995 and a very high concentration of cadmium was measured in the 1995 sediment sample. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. A total maximum daily load (TMDL) has been developed to address this impairment (see Watershed Protection and Restoration Strategies below).

Further downstream (**B-012**), aquatic life uses are fully supported. There is a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. At the furthest downstream site (**B-014**), aquatic life uses are fully supported based on macroinvertebrate

community data and physical/chemical data. A high concentration of copper was measured in water in 1995. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

Beaverdam Creek (B-784) - Aquatic life uses are partially supported based on macroinvertebrate community data.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION</i>
MIDDLE TYGER RIVER SPARTAN MILLS/STARTEX MILL PIPE #: 002 FLOW: 0.4 WQL FOR BOD5,DO,TRC	SC0002453 MINOR INDUSTRIAL WATER QUALITY
MIDDLE TYGER RIVER TOWN OF LYMAN WWTP PIPE #: 001 FLOW: 4.5 PIPE #: 001 FLOW: 5.0 (PHASE II) PIPE #: 001 FLOW: 6.0 (PHASE III) WQL FOR BOD5,DO,TRC,NH3N	SC0021300 MAJOR DOMESTIC WATER QUALITY WATER QUALITY WATER QUALITY
MIDDLE TYGER RIVER SJWD/WTP PIPE #: 001 FLOW: M/R	SCG643003 MINOR DOMESTIC EFFLUENT

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
WR GRACE – CRYOVAC DIV. INDUSTRIAL	422900-1301 (SCD003341609) -----

Land Application Sites

<i>LAND APPLICATION SYSTEM FACILITY NAME</i>	<i>ND# TYPE</i>
TILEFIELD BLUE RIDGE HIGH SCHOOL	ND0064629 DOMESTIC

Mining Activities

<i>MINING COMPANY MINE NAME</i>	<i>PERMIT # MINERAL</i>
CLARK CONSTRUCTION CO. CLARK-TYGER SAND MINE	0886-45 SAND

AUGUSTA SAND & GRAVEL INC.-GREER PLT.
RESTER MINE

0880-45
SAND & GRAVEL

Water Supply

***WATER USER
STREAM***

***TOTAL PUMP. CAPACITY (MGD)
RATED PUMP. CAPACITY (MGD)***

SJWD
MIDDLE TYGER RIVER

24.0
10.0

Growth Potential

There is a high potential for growth in this watershed, which contains a portion of the Town of Duncan. The Cities of Greer and Spartanburg are connected via the I-85 corridor, which bisects this watershed. There are also industrial developmental pressures along U.S. Hwy. 29.

Watershed Protection and Restoration Strategies

Total Maximum Daily Loads (TMDLs)

A total maximum daily load (TMDL) for fecal coliform has been developed for the Middle Tyger River. Levels of fecal coliform bacteria can be elevated in water bodies as the result of both point and nonpoint sources of pollution. Between 1991 and 1995, 38% of the samples collected at station BE-148 exceeded the 400 colonies/100ml standard. Targeting agricultural land for reduction of bacteria is the most effective strategy for this watershed.

A target level for fecal coliform bacteria of 175 colonies/100ml was established. This translates to an agricultural bacteria-loading reduction of 68%. Forested lands are not targeted for reduction, as there are currently no acceptable means of reducing fecal coliform sources within that land use.

There are several tools available for implementing this TMDL, such as Nonpoint Source (NPS) pollution outreach activities and materials. SCDHEC will continue to monitor water quality in the Middle Tyger River to evaluate the effectiveness of these measures.

Funding for TMDL implementation activities is currently available. For more information, see the Bureau of Water web page www.scdhec.net/water or call the Watershed Program at (803) 898-4300.

03050107-050

(Tyger River)

General Description

Watershed 03050107-050 is located in Spartanburg and Union Counties and consists primarily of the **Tyger River** and its tributaries from its confluence with the South and North Tyger Rivers to its confluence with the Broad River. The watershed occupies 138,402 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Wilkes-Madison series. The erodibility of the soil (K) averages 0.24, and the slope of the terrain averages 20%, with a range of 6-45%. Land use/land cover in the watershed includes: 81.8% forested land, 10.9% scrub/shrub land, 6.2% agricultural land, 0.7% urban land, 0.3% barren land, and 0.1% water.

The Tyger River is formed by the confluence of the South Tyger River Watershed and the North Tyger River Watershed. The Tyger River then accepts drainage from Nichol Branch (Kelly Branch), Vise Branch, Harrelson Branch (Wofford Branch, Aiken Branch), Jimmies Creek, Cane Creek (Martha Shands Branch, Williams Branch, Trail Branch), Motley Branch, Hackers Creek, and Dutchman Creek. Dutchman Creek accepts drainage from Harrison Branch, Newman Branch, Smith Creek (Jennings Branch), Powder Spring Branch, Shands Branch (Pennywinkle Branch), Paint Bearden Branch, Bearden Branch, another Wofford Branch, Wiley Fork Creek (Carson Branch), and Dry Branch. Cowdens Creek enters the river next followed by Mill Creek, another Wofford Branch, Holcombe Branch, Isaacs Creek, and Sparks Creek. Further downstream, the Tyger River accepts drainage from the Fairforest Creek Watershed, the Tinker Creek Watershed, Hawkins Creek, Johnsons Creek, Padgetts Creek, Evans Branch, Rennicks Branch, Duffs Branch, Peters Creek, and Cane Creek (Brocks Creek). There are a few ponds and lakes (totaling 133.7 acres) in this watershed used for recreational purposes and 274.8 stream miles, all classified FW. The lower half of the watershed resides within the Sumter National Forest. Rose Hill State Park is located near the confluence of the Tyger River and Fairforest Creek.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-008	P	FW	TYGER RIVER AT S-42-50, E OF WOODRUFF
B-019	S	FW	JIMMIES CREEK AT S-42-201, 2 MI E OF WOODRUFF
B-786	BIO	FW	JIMMIES CREEK AT STEWART RD, 1MI UPSTREAM OF SR 113
B-733	BIO	FW	DUTCHMAN CREEK AT S-42-511
B-051	P	FW	TYGER RIVER AT SC 72, 5.5 MI SW OF CARLISLE
B-777	BIO	FW	CANE CREEK AT SR 359

Tyger River - There are two monitoring sites along the Tyger River. At the upstream site (**B-008**), aquatic life uses are fully supported; however, there are significant decreasing trends in dissolved oxygen concentration and pH, and a significant increasing trend in turbidity. A very high concentration of chromium was measured in water in 1998. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen suggest improving conditions for these parameters. At the downstream site (**B-051**), aquatic life uses are fully supported. There is a significant decreasing trend in pH and a significant increasing trend in total phosphorus concentrations. In water, a high concentration of zinc and very high

concentrations of lead and chromium were each measured once in 1996. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen suggest improving conditions for these parameters. Recreational uses are not supported at either site due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentrations suggests improving conditions for this parameter at the downstream site.

Jimmies Creek (B-019) - There are two monitoring sites along Jimmies Creek. At the upstream site (***B-019***), aquatic life uses are fully supported. There is a significant decreasing trend in pH and a significant increasing trend in total phosphorus concentrations. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. At the downstream site (***B-786***), aquatic life uses are fully supported based on macroinvertebrate community data.

Dutchman Creek (B-733) - Aquatic life uses are fully supported based on macroinvertebrate community data.

Cane Creek (B-777) - Aquatic life uses are fully supported based on macroinvertebrate community data.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION</i>
TYGER RIVER SC DEPT. CORR./CROSS ANCHOR CORR. INST. PIPE #: 001 FLOW: 0.35	SC0036773 MINOR DOMESTIC EFFLUENT
TYGER RIVER TRIBUTARY WR GRACE & CO./CL CASEY MINE PIPE #: 001 FLOW: M/R	SCG730096 MINOR INDUSTRIAL EFFLUENT

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
WOODRUFF INERT & CELLULOSIC LANDFILL DOMESTIC	DWP-916 CLOSED
LANDFORD ROAD LAND CLEARING CONSTRUCTION	421002-1201 (CWP-013) -----

Mining Activities

***MINING COMPANY
MINE NAME***

***PERMIT #
MINERAL***

WR GRACE & CO.
PROVIDENCE MINE

0706-83
VERMICULITE

WR GRACE & CO.
C. CASEY MINE

1017-83
VERMICULITE ORE

WR GRACE & CO.
RODGERS MINE

0460-83
VERMICULITE

CHAPMAN GRADING & CONCRETE
TYGER RIVER PLANT

0494-83
SAND

KING ASPHALT, INC.
JOSEPH W. THEO MINE

1124-83
SAND

CAROLINA VERMICULITE CO.
FANNIE YOUNG MINE

0585-83
VERMICULITE

Growth Potential

There is an overall low potential for growth in this watershed, which contains portions of the Town of Carlisle and the City of Woodruff. Woodruff is expected to experience residential, commercial, and industrial growth. The lower portion of the watershed is effectively excluded from development by the Sumter National Forest. Union County is actively pursuing the development of a multi-county landfill.

03050107-060

(Fairforest Creek/Tinker Creek)

General Description

Watershed 03050107-060 is located in Spartanburg and Union Counties and consists primarily of ***Fairforest Creek and Tinker Creek*** and their tributaries. Both Fairforest Creek and Tinker Creek flow into the Broad River. The watershed occupies 157,870 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Madison-Wilkes series. The erodibility of the soil (K) averages 0.26, and the slope of the terrain averages 13% with a range of 2-40%. Land use/land cover in the watershed includes: 64.4% forested land, 14.7% urban land, 10.5% agricultural land, 9.6% scrub/shrub land, 0.4% barren land, and 0.4% water.

Fairforest Creek originates near the City of Spartanburg and accepts drainage from Goat Pond Creek, Holston Creek, Beaverdam Creek (Reedy Creek), Foster Creek (Underwood Branch), Reedy Branch, Buffalo Creek (Zimmerman Pond), Fleming Branch, Goose Branch, Stillhouse Branch (Smith Branch), and Lancaster Branch (James Branch, Pauline Creek, Dugan Creek). Kelsey Creek flows through Lake Craig (Lake Johnson, Thompson Creek) before entering Fairforest Creek. Black Branch (Whitestone Spring Branch) flows into Fairforest Creek next followed by McElwain Creek (Story Branch, Mineral Spring Branch, Sulphur Spring Branch), Kennedy Creek (Iscons Creek, Cunningham Creek), McClure Creek, Sugar Creek (another Beaverdam Creek, Whitlock Lakes, White Pine Lake), Swink Creek (Bishop Branch), and Rocky Creek. Swink Creek is also known as Mitchell Creek and Bishop Branch is also known as Mill Creek. Further downstream, Fairforest Creek accepts drainage from Mitchell Creek, another Sugar Creek (West Springs Branch), another Buffalo Creek, Dining Creek, Shoal Creek (Toschs Creek), Sand Creek, and Morris Branch.

Tinker Creek flows into the Broad River downstream of Fairforest Creek. Tinker Creek accepts drainage from Henry Creek (Reno Lake), Brushy Creek, and Swift Run. There are several ponds and lakes (totaling 424.3 acres) in this watershed used for recreational purposes, and 261.8 stream miles, all classified FW. The lower portion of the watershed resides within the Sumter National Forest, and Croft State Park is located next to Fairforest Creek, just south of the City of Spartanburg.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-321	P	FW	TRIBUTARY TO FAIRFOREST CREEK, 200 FEET BELOW S-42-65
B-020	S	FW	FAIRFOREST CREEK AT US 221, S OF SPARTANBURG
B-164	S	FW	FAIRFOREST CREEK AT S-42-651, 3.5 MI SSE OF SPARTANBURG
B-021	P/BIO	FW	FAIRFOREST CREEK AT SC 56
B-235	S	FW	KELSEY CREEK AT S-42-321
CL-035	W	FW	LAKE JOHNSON AT SPILLWAY AT S-42-359
CL-033	W	FW	LAKE CRAIG 45 METERS NW OF DAM
BF-007	S	FW	FAIRFOREST CREEK ON COUNTY ROAD 12, SW OF JONESVILLE
B-199	S	FW	MITCHELL CREEK AT COUNTY ROAD 233, 2.3 MI SSW OF JONESVILLE
B-781	BIO	FW	MITCHELL CREEK AT SR 19, 1 ST REPLICATE OF 2 STA., DOWNSTREAM OF BRIDGE
B-779	BIO	FW	SUGAR CREEK AT SR 52

B-067A	S	FW	TOSCHS CREEK AT US 176, 2 MI SW OF UNION
B-067B	S	FW	TOSCHS CREEK AT ROAD TO TREATMENT PLANT OFF S-44-92, SW OF UNION
BF-008	S/BIO	FW	FAIRFOREST CREEK AT S-44-16, SW OF UNION
B-286	S	FW	TINKER CREEK AT ROAD TO TREATMENT PLANT, 1.3 MI SSE OF UNION
B-287	S	FW	TINKER CREEK AT UNNUMBERED COUNTY ROAD, 1.7 MI SSE OF UNION
B-336	W/BIO	FW	TINKER CREEK AT S-44-278, 9 MI SSE OF UNION

Fairforest Creek - There are five monitoring sites along Fairforest Creek. At the furthest upstream site (**B-020**), aquatic life uses are fully supported. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. There are no metals data available for this site. Recreational uses are not supported due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. At the next site downstream (**B-164**), aquatic life uses are fully supported; however, there is a significant increasing trend in total phosphorus concentration. There are no metals data available for this site. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

Further downstream (**B-021**), aquatic life uses are not supported due to impacts to the macroinvertebrate community, and occurrences of chromium, copper, and zinc in excess of the aquatic life acute standards. There were three very high concentrations of chromium measured from 1995 through 1998 and two high concentrations of zinc. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

At the next site downstream (**BF-007**), aquatic life uses are fully supported. There are no metals data available for this site. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. At the furthest downstream site (**BF-008**), aquatic life uses are fully supported based on macroinvertebrate community data and physical/chemical data; however, there is a significant decreasing trend in pH and a significant increasing trend in total phosphorus concentrations. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions.

Unnamed Tributary to Fairforest Creek (B-321) - Aquatic life uses are not supported due to occurrences of chromium, copper, and zinc in excess of the aquatic life acute standards, including four very high concentrations of chromium measured from 1995 through 1999, five high concentrations of zinc measured from 1995 through 1998, and one very high concentration of zinc measured in 1999. There is a significant decreasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions. In addition, there is a significant increasing trend in fecal coliform bacteria concentrations.

Kelsey Creek (B-235) - Aquatic life uses are fully supported, although there are significant decreasing trends in dissolved oxygen concentration and pH. A significant decreasing trend in five-day biochemical

oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions.

Lake Johnson (CL-035) - Lake Edwin Johnson, in Croft State Park in Spartanburg County, is a 40-acre impoundment on Thompson Creek. Lake Johnson's maximum depth is approximately 28 feet (8.5 m); average depth is approximately 14 feet (4.4 m). The lake's watershed comprises approximately 9.3 square miles (24 km²) and includes Lake Craig. The lake is managed for fishing and supports high algal biomass. Aquatic life uses are partially supported due to pH excursions. Recreational uses are fully supported.

Lake Craig (CL-033) - Lake Tom Moore Craig, in Croft State Park in Spartanburg County, is a 105-acre impoundment on Kelsey Creek. The average depth of Lake Craig is approximately 17 feet (5.2 m); the maximum depth is approximately 20 feet (6.1 m). The lake's watershed comprises approximately 8.1 square miles (21 km²). The impoundment has been reconstructed after being destroyed in 1990 floods. Aquatic life uses are fully supported. Although two pH excursions occurred, one was a high value and one was a low value, and therefore do not represent consistent, chronic problems. Recreational uses are fully supported.

Swink Creek or Mitchell Creek (B-199) - There are two monitoring sites along Mitchell Creek. At the upstream site (**B-199**) aquatic life uses are fully supported. Significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. At the downstream site (**B-781**), aquatic life uses are fully supported based on macroinvertebrate community data.

Sugar Creek (B-779) - Aquatic life uses are fully supported based on macroinvertebrate community data.

Toschs Creek - There are two monitoring sites along Toschs Creek. At the upstream site (**B-067A**), aquatic life uses are fully supported. There is a significant decreasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentrations, and turbidity suggest improving conditions for these parameters. At the downstream site (**B-067B**), aquatic life uses are also fully supported. There is a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported at either site due to fecal coliform bacteria excursions.

Tinker Creek - There are three monitoring sites along Tinker Creek. At the upstream site (**B-286**), aquatic life uses are fully supported; however, there is a significant decreasing trend in pH and a significant increasing trend in total phosphorus concentrations. Significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions; however, a significant

decreasing trend in fecal coliform bacteria concentrations suggests improving conditions for this parameter.

Further downstream (**B-287**), aquatic life uses are also fully supported and a significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. Although there were two copper excursions, aquatic life uses are fully supported at the furthest downstream site (**B-336**) based on macroinvertebrate community data. Recreational uses are not supported due to fecal coliform bacteria excursions.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENTS</i>	<i>NPDES# TYPE LIMITATION</i>
FAIRFOREST CREEK SSSD/FAIRFOREST PLANT PIPE #: 001 (Conversion to Regional WWTF) PHASE II: Upgrade SSSD/Fairforest to 20mgd; Construct new outfall to Pacolet River PHASE III: Eliminate SSSD/Lawson Fork & Upgrade SSSD/Fairforest to 30mgd	SC0020435 MAJOR DOMESTIC WQL FOR TRC, NH3N
FAIRFOREST CREEK FAIRWOODS SD/UNITED UTILITIES PIPE #: 001 FLOW: 0.065	SC0035041 MINOR DOMESTIC EFFLUENT
FAIRFOREST CREEK SSSD/CAROLINA COUNTRY CLUB PIPE #: 001 FLOW: 0.1 WQL FOR DO,TRC	SC0039560 MINOR DOMESTIC WATER QUALITY
FAIRFOREST CREEK CITY OF UNION/TOSCHS CREEK WWTP PIPE #: 001 FLOW: 6.0 WQL FOR BOD5,DO,TRC,NH3N	SC0047244 MAJOR DOMESTIC WATER QUALITY
FAIRFOREST CREEK WILSON BROS. SAND CO. PIPE #: 001 FLOW: M/R	SCG730202 MINOR INDUSTRIAL EFFLUENT
FAIRFOREST CREEK DITCH ADO CORP. PIPE #: 001 FLOW: M/R	SCG250071 MINOR INDUSTRIAL EFFLUENT
FAIRFOREST CREEK TRIBUTARY POWDERCRAFT CORP. PIPE #: 001 FLOW: M/R	SCG250159 MINOR INDUSTRIAL EFFLUENT
HOLSTON CREEK EVANS MHP PIPE #: 001 FLOW: 0.0038 WQL FOR TRC,NH3N	SC0029521 MINOR DOMESTIC WATER QUALITY

HOLSTON CREEK MINI MART/SPARTANBURG PIPE #: 001 FLOW: M/R	SCG830017 MINOR INDUSTRIAL EFFLUENT
REEDY CREEK SSSD/MARILYNDALE SD PIPE #: 001 FLOW: 0.0415 WQL FOR TRC	SC0030121 MINOR DOMESTIC WATER QUALITY
GOAT POND CREEK PHILLIPS PETROLEUM CO. PIPE #: 001 FLOW: 0.064 WQL FOR BOD	SC0047805 MINOR INDUSTRIAL WATER QUALITY
KELSEY CREEK CITCO PETROLEUM PIPE #: 001 FLOW: M/R	SCG340008 MINOR INDUSTRIAL EFFLUENT
KELSEY CREEK TRANSMONTAIGNE TER./SPARTANBURG PIPE #: 001 FLOW: M/R PIPE #: 002 FLOW: M/R	SC0048089 MINOR INDUSTRIAL EFFLUENT EFFLUENT
KELSEY CREEK COLONIAL PIPELINE/SPARTANBURG PIPE #: 001 FLOW: M/R	SC0040665 MINOR INDUSTRIAL EFFLUENT
MILL CREEK TOWN OF JONESVILLE PIPE #: 001 FLOW: 0.25 WQL FOR DO,TRC,NH3N	SC0024988 MINOR DOMESTIC WATER QUALITY
MINERAL SPRING BRANCH SPARTANBURG BOYS HOME, INC. PIPE #: 001 FLOW: 0.0035 WQL FOR TRC	SC0024449 MINOR DOMESTIC WATER QUALITY
ROCKY CREEK MILLIKEN & CO./CEDAR HILL PLT PIPE #: 001 FLOW: 0.017 (PHASE I) PIPE #: 001 FLOW: 0.0187 (PHASE II) PIPE #: 001 FLOW: 0.0206 (PHASE III) WQL FOR TRC,NH3N	SC0000809 MINOR INDUSTRIAL WATER QUALITY WATER QUALITY WATER QUALITY
TOSCHS CREEK TRIBUTARY TORRINGTON CO./UNION BEARINGS PIPE #: 001 FLOW: M/R PIPE #: 002 FLOW: M/R WQL FOR BOD5	SC0038636 MINOR INDUSTRIAL WATER QUALITY WATER QUALITY
ISCONS CREEK TRIBUTARY MILLIKEN & CO./WHITESTONE PKG PIPE #: 001 FLOW: M/R	SC0023370 MINOR INDUSTRIAL EFFLUENT
SUGAR CREEK TRIBUTARY UNION AMOCO STATION PIPE #: 001 FLOW: M/R	SCG830023 MINOR INDUSTRIAL EFFLUENT

TINKER CREEK
CITY OF UNION/BELTLINE PLANT
PIPE #: 001 FLOW: 0.35

SC0021202
MINOR DOMESTIC
WQL FOR BOD5,DO,TRC,NH3N

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME</i> <i>FACILITY TYPE</i>	<i>PERMIT #</i> <i>STATUS</i>
RED HILL LANDFILL INDUSTRIAL	422429-1601 ACTIVE
CAMP CROFT LANDFILL DOMESTIC	421001-1102 (DWP-099, DWP-002) CLOSED
CITY OF SPARTANBURG TRANSFER STATION DOMESTIC	421005-6001 -----
CITY OF UNION – BRISON ST C&D CONSTRUCTION	441003-1301 -----
PHILIPPI CHURCH RD ST LANDFILL CONSTRUCTION	442604-1301 -----
DISCOUNT TIRE OF SPARTANBURG -----	422450-5201 -----
MAXIE COPELAND LANDFILL LONGTERM C&D LANDFILL	442329-1201 ACTIVE

Mining Activities

<i>MINING COMPANY</i> <i>MINE NAME</i>	<i>PERMIT #</i> <i>MINERAL</i>
WILSON BROTHERS SAND CO. FAIRFOREST CREEK SAND MINE	1059-83 SAND

Growth Potential

There is a high potential for growth in this watershed, which contains portions of the Cities of Spartanburg and Union, the Towns of Pacolet and Jonesville, and the Buffalo Mill Village. Industrial growth in particular is expected along the I-85 corridor and major roads with I-85 interchanges at the top of the watershed. There are also industrial developmental pressures along I-26, U.S. Hwy. 29, and U.S. Hwy. 221. Urban development is evident in the City of Union and in the unincorporated Buffalo Mill Village in the form of residential, commercial, and industrial uses. Growth is most evident along the U.S. Hwy. 176 Bypass. U.S. Hwy. 176 north from Union to Spartanburg has been widened to four lanes and has generated the development of an industrial park. The lower portion of the watershed is effectively excluded from development by the Sumter National Forest.

Broad River Basin Description

The **Broad River Basin** encompasses 21 watersheds and 2,252 square miles within South Carolina, excluding the Enoree River and Tyger River Basins. The Broad River flows across the Piedmont region of the State. Of the approximately 1.4 million acres, 72.1% is forested land, 13.4% is agricultural land, 6.9% is urban land, 5.3% is scrub/shrub land, 1.8% is water, and 0.5% is barren land. The urban land percentage is comprised chiefly of the Cities of Spartanburg, Gaffney, and Chester, and portions of the Cities of York, Union, and Columbia. In the Broad River Basin, there are approximately 2,508 stream miles and 14,602.5 acres of lake waters. The Broad River flows across the North Carolina/South Carolina state line and accepts drainage from Buffalo Creek, Cherokee Creek, Kings Creek, Thicketty Creek, Bullock Creek, and the Pacolet River. The Broad River then accepts drainage from Turkey Creek, Browns Creek, the Sandy River, the Little River, Jackson Creek, Mill Creek, and Cedar Creek before converging with the Saluda River in Columbia.

Physiographic Regions

The State of South Carolina has been divided into six Major Land Resource Areas (MLRAs) by the USDA Soil Conservation Service. The MLRAs are physiographic regions that have soils, climate, water resources, and land uses in common. The physiographic region that defines the Broad River Basin is as follows:

The **Piedmont** is an area of gently rolling to hilly slopes with narrow stream valleys dominated by forests, farms, and orchards; elevations range from 375 to 1,000 feet.

Land Use/Land Cover

General land use/land cover data for South Carolina was derived from SCDNR 1990 SPOT multispectral satellite images using image mapping software to inventory the State's land classifications, which are as follows.

Urban land is characterized by man-made structures and artificial surfaces related to industrial, commercial, and residential uses, as well as vegetated portions of urban areas.

Agricultural/Grass land is characterized by cropland, pasture, and orchards and may include some grass cover in urban, scrub/shrub and forest areas.

Scrub/Shrub land is adapted from the western Rangeland classification to represent the "fallow" condition of the land (currently unused, yet vegetated), and is most commonly found in the dry Sandhills region including areas of farmland, sparse pines, regenerating forest lands, and recently harvested timber lands.

Forest land is characterized by deciduous and evergreen trees not including forests in wetland settings.

Forested Wetland (swampland) is the saturated bottomland, mostly hardwood forests that are primarily composed of wooded swamps occupying river floodplains and isolated low-lying wet areas, primarily located in the Coastal Plain.

Nonforested Wetland (marshland) is dependent on soil moisture to distinguish it from scrub/shrub since both classes contain grasses and low herbaceous cover; nonforested wetlands are most common along the coast and isolated freshwater areas found in the Coastal Plain.

Barren land is characterized by an unvegetated condition of the land, both natural (rock, beaches and unvegetated flats) and man-induced (rock quarries, mines, and areas cleared for construction in urban areas or clearcut forest).

Water (non-land) includes both fresh and tidal waters.

Soil Types

The dominant soil associations, or those soil series comprising, together, over 40% of the land area, were recorded for each watershed in percent descending order. The individual soil series for the Broad River Basin are described as follows.

Alpin soils are well drained and excessively drained, sandy soils with a loamy or sandy subsoil.

Badin soils are moderately deep, well drained, moderately permeable, clayey soils that formed in material weathered from Carolina Slate or other fine grained rock, on ridgetops and side slopes.

Cecil soils are deep, well drained, gently sloping to sloping soils that have red subsoil.

Georgeville soils are gently sloping to sloping, well drained and moderately well drained soils.

Goldston soils are dominantly sloping to steep, well drained to excessively drained soils.

Helena soils are gently sloping to sloping, moderately well drained to well drained soils.

Herndon soils are gently sloping to sloping, well drained and moderately well drained soils.

Hiwassee soils are well drained, moderately sloping soils with clayey subsoil, moderately deep.

Madison soils are well drained, moderately sloping soils, with clayey subsoil, moderately deep.

Pacolet soils are well drained, moderately steep soils with clayey subsoil, moderately deep.

Tatum soils are dominantly sloping to steep, well drained to excessively drained soils, with a loamy subsoil, moderately deep or shallow to weathered rock.

Wilkes soils are dominantly strongly sloping to steep, well drained soils.

Winnsboro soils are well drained, gently sloping to steep, moderately deep to deep clayey soils.

Slope and Erodibility

The definition of soil erodibility differs from that of soil erosion. Soil erosion may be more influenced by slope, rainstorm characteristics, cover, and land management than by soil properties. Soil erodibility refers to the properties of the soil itself, which cause it to erode more or less easily than others when all other factors are constant.

The soil erodibility factor, K, is the rate of soil loss per erosion index unit as measured on a unit plot, and represents an average value for a given soil reflecting the combined effects of all the soil

properties that significantly influence the ease of soil erosion by rainfall and runoff if not protected. The K values closer to 1.0 represent higher soil erodibility and a greater need for best management practices to minimize erosion and contain those sediments that do erode. The range of K-factor values in the Broad River Basin is from 0.15 to 0.39.

Fish Consumption Advisory

At the time of publication, there are no fish consumption advisories in the Broad River Basin. Fish consumption advisories are updated annually in March. For background information and the most current advisories please visit the Bureau of Water homepage at <http://www.scdhec.net/water> and click on "Advisories". For more information or a hard copy of the advisories, call SCDHEC's Division of Health Hazard Evaluation toll-free at (888) 849-7241.

Climate

Normal yearly rainfall in the Broad River area is 48.25 inches, according to the S.C. historic climatological record. Data compiled from National Weather Service stations in Rainbow Lake, Gaston Shoals, Gaffney, Ninety Nine Islands, Spartanburg, Santuck, Chester, Blair, Winnsboro, Parr, Little Mountain, Columbia at U.S.C., and Columbia Metropolitan Airport were used to determine the general climate information for this portion of the State. The highest level of rainfall occurs in the summer with 13.55 inches; 12.41, 10.37, and 12.50 inches of rain falling in the fall, winter, and spring, respectively. The average annual daily temperature is 62.1EF. Summer temperatures average 78.4EF and fall, winter, and spring temperatures are 63.0EF, 45.0EF, and 62.1EF, respectively.

Watershed Evaluations

03050105-050

(Broad River)

General Description

Watershed 03050105-050 is located in Cherokee and Spartanburg Counties and consists primarily of tributaries of the **Broad River**. This watershed occupies 16,496 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Pacolet series. The erodibility of the soil (K) averages 0.28, and the slope of the terrain averages 10%, with a range of 2-45%. Land use/land cover in the watershed includes: 44.2% forested land, 34.6% agricultural land, 11.0% urban land, 9.1% scrub/shrub land, 0.8% barren land, and 0.3% water.

Before the Broad River flows across the South Carolina/North Carolina border it accepts drainage from several streams originating in South Carolina that flow into North Carolina including Arrowood Branch, Big Horse Creek (Little Horse Creek, Jolleys Lake), Suck Creek, and Ashworth Creek. There are several small ponds and lakes in this watershed (totaling 43.8 acres) used for recreational purposes and 18.6 stream miles, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-296	BIO	FW	SUCK CREEK AT WALTER RD OFF SR 29 NEAR NC STATE LINE

Suck Creek (B-296) - Aquatic life uses are fully supported based on macroinvertebrate community data.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM</i>	<i>NPDES#</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
<i>PERMITTED FLOW @ PIPE (MGD)</i>	<i>LIMITATION</i>
<i>COMMENT</i>	
LITTLE HORSE CREEK	SC0002429
SPARTAN MILLS/MONTGOMERY DIV.	MAJOR INDUSTRIAL
PIPE #: 001 FLOW: M/R	WATER QUALITY
WQL FOR TRC	

Growth Potential

There is a low potential for growth in this watershed.

03050105-090

(Broad River)

General Description

Watershed 03050105-090 is located in Cherokee and York Counties and consists primarily of the **Broad River** and its tributaries from the North Carolina border to the Pacolet River. The watershed occupies 82,800 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Wilkes-Goldston-Badin series. The erodibility of the soil (K) averages 0.28, and the slope of the terrain averages 12%, with a range of 2-45%. Land use/land cover in the watershed includes: 67.8% forested land, 18.8% agricultural land, 5.0% scrub/shrub land, 4.5% urban land, 2.8% water, and 1.1% barren land.

After the river crosses the state line, it accepts drainage from Ross Creek (Sarratt Creek), Mikes Creek, the Bowens River (Wylies Creek), the Buffalo Creek Watershed, and the Cherokee Creek Watershed. Further downstream, Peoples Creek (Furnace Creek, Toms Branch) drains into the river near the City of Gaffney. Doolittle Creek enters the river next, near the Town of Blacksburg, followed by London Creek (Lake Cherokee, Little London Creek), Bear Creek, McKowns Creek, Dry Branch, the Kings Creek Watershed, and Quinton Branch. Mud Creek enters the river next, downstream of Mud Island, followed by Guyonmbore Creek, Mountain Branch, Abingdon Creek (Wolf Branch, Service Branch, Jenkins Branch), the Thicketty Creek Watershed, Beaverdam Creek (McDaniel Branch), the Bullock Creek Watershed, and Dry Creek (Nelson Creek).

There are numerous ponds and lakes (totaling 245.6 acres) in this watershed and 133.0 stream miles, all classified FW. A fifteen mile segment of the Broad River, extending from Ninety Nine Islands Dam to the river's confluence with the Pacolet River is designated as a South Carolina State Scenic River in recognition of it's outstanding natural resources.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-789	BIO	FW	ROSS CREEK AT SR 577
B-788	BIO	FW	BOWENS RIVER AT SR 83
B-042	P	FW	BROAD RIVER AT SC 18, 4 MI NE GAFFNEY
B-088	S	FW	CANOE CREEK AT S-11-245, 2 MI W OF BLACKSBURG
B-211	S	FW	PEOPLES CREEK AT UNIMPROVED ROAD, 2.3 MI E OF GAFFNEY
B-100	S	FW	FURNACE CREEK AT S-11-50, 6 MI E OF GAFFNEY
B-323	S	FW	DOOLITTLE CREEK AT S-11-100, 1.25 MI SE OF BLACKSBURG
B-343	W	FW	LAKE CHEROKEE IN FOREBAY NEAR DAM
B-330	S	FW	GUYONMOORE CREEK AT S-46-233
B-044	P	FW	BROAD RIVER AT SC 211, 12 MI SE OF GAFFNEY

Broad River – There are two monitoring sites along this section of the Broad River. Aquatic life uses are fully supported at both sites (**B-042, B-044**); however, there is a significant increasing trend in turbidity. Significant increasing trends in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration at both sites suggest improving conditions for these parameters. At the upstream site (B-042), a very high concentration of chromium

was measured in 1996. At the downstream site (B-044), a very high concentration of zinc was measured in 1995. In sediments, P,P'DDT, and P,P'DDE and P,P'DDD, both metabolites of DDT, were detected in the 1999 sample. Although the use of DDT was banned in 1973, it is very persistent in the environment.

Recreational uses are not supported at either site due to fecal coliform bacteria excursions.

Ross Creek (B-789) - Aquatic life uses are fully supported based on macroinvertebrate community data.

Bowens River (B-788) - Aquatic life uses are fully supported based on macroinvertebrate community data.

Canoe Creek (B-088) - Aquatic life uses are partially supported due to dissolved oxygen excursions. There is a significant decreasing trend in pH. Recreational uses are not supported due to fecal coliform bacteria excursions.

Peoples Creek (B-211) - Aquatic life uses are fully supported. There is a significant decreasing trend in pH. Recreational uses are not supported due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentrations suggests improving conditions for this parameter.

Furnace Creek (B-100) - Aquatic life uses are fully supported. P,P'DDT was detected in the 1998 sediment sample. Although the use of DDT was banned in 1973, it is very persistent in the environment. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentrations, and turbidity suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentrations suggests improving conditions for this parameter.

Doolittle Creek (B-323) - Aquatic life uses are fully supported; however, there are significant decreasing trends in dissolved oxygen concentration and pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

Lake Cherokee (B-343) - Lake Cherokee is a 45-acre impoundment at the headwaters of London Creek in Cherokee County, with a maximum depth of approximately 32 feet (9.8 meters) and an average depth of 11 feet (3.4 meters). Lake Cherokee's watershed comprises approximately 0.2 square miles (0.4 km²). In an effort to provide access for boating and fishing, the lake was stocked with triploid grass carp in 1985, 1987 and 1991; and aquatic herbicides were applied in 1989, 1991, and 1995. More recent efforts to clear access for boating and fishing included stocking grass carp and applying aquatic herbicide in 2001. Aquatic life and recreational uses are fully supported.

Guyonmoore Creek (B-330)– Aquatic life uses are fully supported. In sediments, a very high concentration of chromium was measured in the 1999 sample and di-n-butylphthalate was detected in the 1996 sample. Recreational uses are partially supported due to fecal coliform bacteria excursions.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION</i>
BROAD RIVER SC DISTRIBUTORS INC. PIPE #: 001 FLOW: 0.04	SC0002755 MINOR DOMESTIC EFFLUENT
BROAD RIVER MILLIKEN & CO./MAGNOLIA PLT PIPE #: 001 FLOW: 3.10 (PHASE I) PIPE #: 001 FLOW: 3.89 (PHASE II)	SC0003182 MAJOR INDUSTRIAL EFFLUENT EFFLUENT
BROAD RIVER CHAMPION PRODUCTS PIPE #: 001 FLOW: 2.0	SC0035947 MAJOR INDUSTRIAL EFFLUENT
BROAD RIVER CITY OF GAFFNEY/PEOPLES CREEK PLT PIPE #: 001 FLOW: 4.0 WQL FOR DO	SC0047091 MAJOR DOMESTIC WATER QUALITY
BROAD RIVER TOWN OF BLACKSBURG/CANOE CREEK PLT PIPE #: 001 FLOW: 0.68 (PROPOSED) WQL FOR DO,TRC,NH3N	SC0047457 MINOR DOMESTIC WATER QUALITY
PEOPLES CREEK COLONIAL PIPELINE PIPE #: 001 FLOW: M/R	SCG830024 MINOR INDUSTRIAL EFFLUENT
PEOPLES CREEK HAMRICK MILLS PIPE #: 001 FLOW: M/R	SCG250167 MINOR INDUSTRIAL EFFLUENT

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
CITY OF GAFFNEY LANDFILL DOMESTIC	DWP-918; DWP-908 CLOSED
CITY OF GAFFNEY C/C LANDFILL DOMESTIC	CWP-022 (111002-1201) -----

CHEROKEE COUNTY LANDFILL INDUSTRIAL	111001-6001 (SCD001411040) CLOSED
BLACKSBURG DUMP-METROMONT -----	----- CLOSED
CHEROKEE RECYCLING CENTER -----	111001-5101 -----
DUKE POWER BURIAL SITE INDUSTRIAL	IWP-142 -----

Land Application Sites

LAND APPLICATION SYSTEM FACILITY NAME

ND# TYPE

SPRAYFIELD PEELER RUG COMPANY	ND0070980 INDUSTRIAL
SPRAYFIELD SCREEN PRINTERS	ND0069451 INDUSTRIAL

Mining Activities

MINING COMPANY MINE NAME

PERMIT # MINERAL

RANDOLPH BROAD RIVER PLANT BROAD RIVER PLANT	0042-21 SAND
THOMAS SAND CO. BLACKSBURG PLANT	0869-21 SAND
RAY BROWN ENTERPRIZES BROWN #3 SAND MINE	1070-21 SAND

Water Supply

WATER USER STREAM

TOTAL PUMP. CAPACITY (MGD) RATED PUMP. CAPACITY (MGD)

CITY OF GAFFNEY BPW	18.0
BROAD RIVER	12.0

Growth Potential

There is a moderate potential for growth in this watershed, which contains portions of the Town of Blacksburg and the City of Gaffney. The City of Gaffney is planning for new subdivision growth by considering new regional treatment facilities near the Cherokee Creek-Broad River area. Major growth is expected along the I-85 corridor, particularly in the area north of Gaffney. The potential for industrial growth exists along S.C. Hwy. 329 east of Gaffney due to an existing industrial park. Duke Power is planning to build a natural gas-fired power plant in 03050105-120, which should provide some growth to the area. Duke Power will buy water from the nearby Town of Blacksburg. The facility should be open by summer 2003.

Watershed Protection and Restoration Strategies

Special Projects

Grazing Land Watershed Protection and Enhancement Through Demonstration and Education

Of the 21,500 farms in South Carolina, 12,000 are involved in the production of beef cattle. Water quality impacts from cattle grazing include the addition of fecal coliform and nutrient enrichment from animal wastes, sedimentation, and riparian zone degradation. The objective of this project, funded by a USEPA Section 319 grant of the Clean Water Act and implemented by Clemson University, is to develop demonstration sites and provide demonstration workshops and written material to cattlemen on the BMP's necessary to protect and enhance the water quality of streams and ponds on grazing lands.

One demonstration site is located in this watershed on the Broad River below 99 Island. The demonstration will show how to exclude cattle from the Broad River, construct creek access ramps, and provide watering stations away from the river. The preference of cattle for using stream water or clean well water will also be evaluated. If clean well water is preferred, it would be a good alternative to fencing animals away from waterways. A ram pump will also be demonstrated along with techniques in rotational grazing.

03050105-100

(*Buffalo Creek*)

General Description

Watershed 03050105-100 is located in Cherokee County and consists primarily of *Buffalo Creek* and its tributaries. The watershed occupies 9,921 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Herndon-Helena-Goldston-Georgeville series. The erodibility of the soil (K) averages 0.34, and the slope of the terrain averages 10%, with a range of 2-45%.

Land use/land cover in the watershed includes: 65.8% forested land, 22.4% agricultural land, 8.6% urban land, 2.8% scrub/shrub land, and 0.4% barren land.

Bee Branch flows across the North Carolina border and drains into Buffalo Creek, which flows into the Broad River. There are a few ponds (totaling 6.6 acres) and 19.5 stream miles in this watershed, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-740	BIO	FW	BUFFALO CREEK AT SC 198
B-119	S	FW	BUFFALO CREEK AT S-11-213, 2.2 MI NNW OF BLACKSBURG
B-057	S	FW	BUFFALO CREEK AT SC 5, 1 MI W OF BLACKSBURG

Buffalo Creek - There are three monitoring sites along Buffalo Creek. At the upstream site (**B-740**), aquatic life uses are fully supported based on macroinvertebrate community data. At the next site downstream (**B-119**), aquatic life uses are fully supported. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentration suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

At the furthest downstream site (**B-057**), aquatic life uses are partially supported due to occurrences of copper in excess of the aquatic life acute standards. In water, a very high concentration of cadmium and a very high concentration of chromium were measured in 1995 and indeno(1,2,3-cd)pyrene was detected in 1995. In sediment, bis(2-ethylhexyl)phthalate was measured in the 1997 sample and tetrachloroethene was detected in the 1998 sample. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentration suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION</i>
BUFFALO CREEK SPEEDWAY #66/BLACKSBURG PIPE #: 002 FLOW: 0.0075 WQL FOR BOD5,DO,TRC,NH3N	SC0042196 MINOR INDUSTRIAL WATER QUALITY
BUFFALO CREEK TNS MILLS INC./BLACKSBURG PLT PIPE #: 001 FLOW: M/R	SCG250043 MINOR INDUSTRIAL EFFLUENT
BUFFALO CREEK TRIBUTARY BROAD RIVER TRUCK STOP PIPE #: 001 FLOW: 0.01 WQL FOR TRC,NH3N	SC0032433 MINOR DOMESTIC WATER QUALITY

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
MONSANTO TEXTILES CO. INDUSTRIAL	IWP-179 (SCD001700863) -----

Growth Potential

There is a moderate potential for growth in this watershed, which contains a portion of the Town of Blacksburg. Major growth is expected along the I-85 corridor, which stretches across the watershed. Commercial growth is also associated with the I-85 corridor near the Town of Blacksburg.

03050105-110

(Cherokee Creek)

General Description

Watershed 03050105-110 is located in Cherokee County and consists primarily of *Cherokee Creek* and its tributaries. The watershed occupies 14,911 acres of the Piedmont region of South Carolina.

The predominant soil types consist of an association of the Cecil-Goldston-Badin series. The erodibility of the soil (K) averages 0.22, and the slope of the terrain averages 10%, with a range of 2-45%. Land use/land cover in the watershed includes: 36.8% forested land, 33.2% agricultural land, 22.1% urban land, 4.6% scrub/shrub land, 1.9% water, and 1.4% barren land.

Cherokee Creek flows through Lake Whelchel (180 acres) near the City of Gaffney and accepts drainage from Allison Creek in the lake and Providence Branch downstream of the lake before flowing into the Broad River. There are several ponds and lakes (totaling 219.9 acres) in this watershed and 16.6 stream miles, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-056	S	FW	CHEROKEE CREEK AT US 29, 3 MI E OF GAFFNEY
B-679	BIO	FW	CHEROKEE CREEK AT SC 329

Cherokee Creek - There are two monitoring sites along Cherokee Creek. At the upstream site (**B-056**), aquatic life uses are fully supported. There is a significant decreasing trend in pH. Significant decreasing trends in total phosphorus concentration and turbidity suggest improving conditions for these parameters.

Recreational uses are not supported at this site due to fecal coliform bacteria excursions. At the downstream site (**B-679**), aquatic life uses are partially supported based on macroinvertebrate community data.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM</i>	<i>NPDES#</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
<i>PERMITTED FLOW @ PIPE (MGD)</i>	<i>LIMITATION</i>
<i>COMMENT</i>	
PROVIDENCE BRANCH	SCG645045
BPW/VICTOR GAFFNEY WTP	MINOR DOMESTIC
PIPE #: 001 FLOW: 1.02	WATER QUALITY
WQL FOR TRC	

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME</i>	<i>PERMIT #</i>
<i>FACILITY TYPE</i>	<i>STATUS</i>
CHEROKEE COUNTY LANDFILL	111001-1101
DOMESTIC	CLOSED

Mining Activities

<i>MINING COMPANY</i>	<i>PERMIT #</i>
<i>MINE NAME</i>	<i>MINERAL</i>
BOREN BRICK	0113-21
HIGGINS RED CLAY PIT	CLAY
BOREN BRICK	0114-21
SHALE PIT	SHALE

Water Supply

<i>WATER USER</i>	<i>TOTAL PUMP. CAPACITY (MGD)</i>
<i>STREAM</i>	<i>RATED PUMP. CAPACITY (MGD)</i>
CITY OF GAFFNEY BPW	----
LAKE WHELCHER	18.0

Growth Potential

There is a moderate potential for growth in this watershed, which contains a portion of the City of Gaffney. The City of Gaffney is planning for new subdivision growth by considering new regional treatment facilities near the Cherokee Creek-Broad River area. Major growth is expected along the I-85 corridor, particularly in the area north of Gaffney. Commercial growth is also associated with the I-85 corridor near the S.C. Hwy. 11 interchange north of Gaffney and at the S.C. Hwy. 105 interchange with the new outlet center. The potential for industrial growth exists along S.C. Hwy. 329 east of Gaffney due to the existing industrial park.

03050105-120

(Kings Creek)

General Description

Watershed 03050105-120 is located in Cherokee and York Counties and consists primarily of *Kings Creek* and its tributaries. The watershed occupies 33,146 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Goldston-Badin series. The erodibility of the soil (K) averages 0.15, and the slope of the terrain averages 13%, with a range of 2-45%.

Land use/land cover in the watershed includes: 79.1% forested land, 15.3% agricultural land, 3.5% scrub/shrub land, 1.2% urban land, 0.5% barren land, and 0.4% water.

Kings Creek originates in North Carolina and flows across the state line to accept drainage from Modlin Branch, Dixon Branch, Ponders Branch, Stonehouse Branch, Dellingham Branch, Mill Creek, and Jumping Branch. Further downstream, Garner Branch flows into Kings Creek followed by Manning Branch, Bells Branch, Beech Branch, Wolf Creek, and Nells Branch before draining into the Broad River.

There are several recreational ponds and lakes in this watershed (totaling 27.0 acres) and 51.1 stream miles, all classified FW. Kings Mountain National Military Park and Kings Mountain State Park are additional natural resources in the watershed.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-333	W/BIO	FW	KINGS CREEK AT S-11-209, 3 MI W OF SMYRNA

Kings Creek (B-333) - Although two copper excursions occurred, aquatic life uses are fully supported based on macroinvertebrate community data. Recreational uses are partially supported due to fecal coliform bacteria excursions.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM</i>	<i>NPDES#</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
<i>PERMITTED FLOW @ PIPE (MGD)</i>	<i>LIMITATION</i>
<i>COMMENT</i>	
MILL CREEK TRIBUTARY	SCG730068
VULCAN MATERIALS CO./BLACKSBURG	MINOR INDUSTRIAL
PIPE #: 001, 002 FLOW: M/R	EFFLUENT

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME</i>	<i>PERMIT #</i>
<i>FACILITY TYPE</i>	<i>STATUS</i>
BLACKSBURG DUMP/ANTIOCH	-----
DOMESTIC	CLOSED

Mining Activities

<i>MINING COMPANY</i>	<i>PERMIT #</i>
<i>MINE NAME</i>	<i>MINERAL</i>
BOREN BRICK	0115-21
SERICITE PIT	SERICITE
VULCAN CONSTRUCTION MATERIALS	0354-21
BLACKSBURG QUARRY	LIMESTONE
TAYLOR CLAY PRODUCTS CO.	0221-21
ROBERTS MINE	SHALE
TAYLOR CLAY PRODUCTS CO.	0199-21
GROVER MINE	MANGANESE SCHIST
INDUSTRIAL MINERALS, INC.	0162-21
KINGS CREEK MINE	SERICITE

Growth Potential

There is an overall low potential for growth in this watershed, which contains a portion of the Town of Smyrna, due to the absence of public utilities. Duke Power is planning to build a natural gas-fired power plant, Mill Creek Station, near the top of the watershed, which is expected to bring some growth to the area. Duke Power will buy water from the nearby Town of Blacksburg. The facility should be open by summer 2003.

03050105-130

(*Thicketty Creek*)

General Description

Watershed 03050105-130 is located in Cherokee County and consists primarily of *Thicketty Creek* and its tributaries. The watershed occupies 100,753 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Pacolet-Wilkes-Herndon-Madison series. The erodibility of the soil (K) averages 0.30, and the slope of the terrain averages 16%, with a range of 2-45%. Land use/land cover in the watershed includes: 5.2% urban land, 19.7% agricultural land, 5.2% scrub/shrub land, 0.9% barren land, 68.4% forested land, and 0.6% water.

Thicketty Creek joins with Macedonia Creek to form Lake Thicketty at the top of the watershed. Thicketty Creek then accepts drainage from Thicketty Mountain Creek (Linder Creek), Clary Creek, Allgood Branch, and Irene Creek (Cole Creek) near the City of Gaffney. Little Thicketty Creek (Lake Rufus, Rocky Ford Creek, Cowpens Creek) enters Thicketty Creek next followed by Limestone Creek (Mill Creek, Skelton Creek) and Big Blue Branch (Blue Branch). North Goucher Creek and South Goucher Creek join in Hammett Lake to form Goucher Creek (Gum Root Creek), which flows into Thicketty Creek, downstream of Big Blue Branch. Jones Creek (Martin Lake) enters Thicketty Creek next followed by Timber Ridge Branch, Minkum Creek (Polecat Creek), Crocker Branch, Luster Mill Creek, and Gilkey Creek. Gilkey Creek accepts drainage from Gaffney Country Club Lake, Blanton Creek, Peeler Branch, Spencer Branch (also known as Cartum Branch), Dry Fork Creek, Martin Branch, and Rocky Branch. Thicketty Creek drains into the Broad River. There are several ponds and lakes (totaling 515.5 acres) in this watershed and a total of 182.3 stream miles, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-342	W	FW	LAKE THICKETTY IN FOREBAY NEAR DAM
B-059	S	FW	IRENE CREEK AT S-11-307, 2.5 MI W OF GAFFNEY
B-095	S	FW	THICKETTY CREEK AT S-11-164
B-128	S	FW	LIMESTONE CREEK AT S-11-301
B-133	S/BIO	FW	THICKETTY CREEK AT SC 18, 8.3 MI S OF GAFFNEY
B-334	W/BIO	FW	GILKEY CREEK AT S-11-231, 9 MI SE OF GAFFNEY
B-062	S/BIO	FW	THICKETTY CREEK AT SC 211, 2 MI ABOVE JUNCTION WITH BROAD RIVER

Thicketty Creek - There are three monitoring sites along Thicketty Creek. At the upstream site (**B-095**), aquatic life uses are fully supported. There is a significant decreasing trend in pH. Further downstream (**B-133**), aquatic life uses are fully supported based on macroinvertebrate community data and physical/chemical data. There is a significant decreasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and turbidity suggest improving conditions for these parameters.

At the downstream site (**B-062**), aquatic life uses are fully supported based on macroinvertebrate community data and physical/chemical data. Significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters. Recreational uses are

not supported at any site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

Lake Thicketty (B-342) - Lake Thicketty is a 100-acre impoundment on Thicketty and Macedonia Creeks in Cherokee County, with a maximum depth of approximately 20 feet (6.1 m), and an average depth of 10 feet (3.1 m). Lake Thicketty's watershed comprises 6.9 square miles (18 km²). Aquatic life and recreational uses are fully supported.

Irene Creek (B-059) - Aquatic life uses are fully supported. There is a significant decreasing trend in pH. A significant decreasing trend in turbidity suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

Limestone Creek (B-128) - Aquatic life uses are fully supported. There is a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions.

Gilkey Creek (B-334) - Aquatic life uses are fully supported based on macroinvertebrate community data and physical/chemical data. Recreational uses are not supported due to fecal coliform bacteria excursions.

Natural Swimming Areas

<i>FACILITY NAME</i>	<i>PERMIT #</i>
<i>RECEIVING STREAM</i>	<i>STATUS</i>
CAMP LEA	11-N02
LAKE RUFUS	ACTIVE

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM</i>	<i>NPDES#</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
<i>PERMITTED FLOW @ PIPE (MGD)</i>	<i>LIMITATION</i>
THICKETTY CREEK	SC0031551
CITY OF GAFFNEY/CLARY WWTP	MAJOR DOMESTIC
PIPE #: 001 FLOW: 3.6	WATER QUALITY
WQL FOR BOD5,DO,TRC,NH3N	
ALLGOOD BRANCH	SC0034002
PINECONE CAMPGROUND WWTP	MINOR DOMESTIC
PIPE #: 001 FLOW: 0.018	WATER QUALITY
WQL FOR TRC,NH3N	

IRENE CREEK
NESTLE FROZEN FOODS CORP.
PIPE #: 001 FLOW: 0.066

SC0037664
MINOR INDUSTRIAL
WQL FOR TRC

SKELTON CREEK
COLONIAL PIPELINE/GAFFNEY STATION
PIPE #: 001 FLOW: M/R

SCR003084
MINOR INDUSTRIAL
EFFLUENT

MILL CREEK
HAMRICK MILLS/MUSGROVE MILLS
PIPE #: 001 FLOW: M/R

SCG250168
MINOR INDUSTRIAL
EFFLUENT

SPENCERS BRANCH
BRIARCREEK SD II/UNITED UTILITIES
PIPE #: 001 FLOW: 0.020
WQL FOR TRC,NH3N

SC0026409
MINOR DOMESTIC
WATER QUALITY

SPENCERS BRANCH TRIBUTARY
BRIARCREEK SD I/UNITED UTILITIES
PIPE #: 001 FLOW: 0.028
WQL FOR TRC,NH3N

SC0023736
MINOR DOMESTIC
WATER QUALITY

JONES CREEK
MEDLEY FARMS NPL SITE
PIPE #: 001 FLOW: 0.041

SC0046469
MINOR INDUSTRIAL
EFFLUENT

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME
FACILITY TYPE

PERMIT #
STATUS

LOVE SPRINGS/PIED INDUSTRIAL SERV.
INDUSTRIAL

IWP-131

Land Application Sites

LAND APPLICATION SYSTEM
FACILITY NAME

ND#
TYPE

SPRAYFIELD
BLANTON'S SEPTIC

ND0080489
DOMESTIC

Growth Potential

There is a moderate potential for growth in this watershed, which contains portions of the City of Gaffney and the Town of Cowpens. Major growth is expected along the I-85 corridor, which stretches across the watershed, particularly in the area north of Gaffney. U.S. Hwy. 29 and a rail line also stretch across the watershed from Spartanburg through Cowpens to Gaffney.

03050105-140

(Bullock Creek)

General Description

Watershed 03050105-140 is located in York County and consists primarily of **Bullock Creek** and its tributaries. The watershed occupies 75,801 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Wilkes-Cecil-Goldston-Badin series. The erodibility of the soil (K) averages 0.22, and the slope of the terrain averages 13%, with a range of 2-45%.

Land use/land cover in the watershed includes: 76.6% forested land, 15.2% agricultural land, 7.0% scrub/shrub land, 0.6% barren land, 0.4% urban land, and 0.2% water.

Bullock Creek originates near the South Carolina/North Carolina border and accepts drainage from Gin Branch, Rocky Branch, Buckhorn Creek (Silver Creek), and Clark Fork. Clark Fork also originates near the state line and flows through Lake Crawford to join Jennings Branch and forms Lake York before accepting drainage from Biggers Branch and Saltlick Branch. Downstream of Clark Fork, Bullock Creek accepts drainage from Thompson Branch, Berry Branch, Purgatory Branch, Mitchell Branch, Plexico Branch, Loves Creek, and Bells Creek (Prater Branch, Dowdle Branch). There are a few ponds and lakes (totaling 161.4 acres) in this watershed and 123.2 stream miles, all classified FW. Kings Mountain State Park extends over the upper portion of the watershed along with Kings Mountain National Military Park.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-739	BIO	FW	BULLOCK CREEK AT S-46-40
B-325	S	FW	CLARK FORK INTO CRAWFORD LAKE NEAR SC 161 & 705
B-737	W	FW	LAKE YORK IN KINGS MOUNTAIN STATE PARK
B-326	S	FW	LONG BRANCH ON SC 216, BELOW KINGS MOUNTAIN PARK REC. AREA
B-157	BIO	FW	CLARK FORK AT S-46-63
B-159	S	FW	BULLOCK CREEK AT SC 97, 4.8 MI S OF HICKORY GROVE

Bullock Creek - There are two monitoring sites along Bullock Creek. At the upstream site (**B-739**), aquatic life uses are fully supported based on macroinvertebrate community data. At the downstream site (**B-159**), aquatic life uses are fully supported. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

Lake York (B-737) - Lake York, located in Kings Mountain State Park, is a 50-acre impoundment on Clark Fork. Lake York's maximum depth is approximately 13 feet (4.0 m); average depth is 9 feet (2.7 m). The lake's watershed comprises approximately 0.8 square miles (2 km²) in North and South Carolina. In an effort to provide access for swimming and boating, triploid grass carp were stocked in 1985, 1987, and 1993; and aquatic herbicides were applied in 1995. Aquatic life and recreational uses are fully supported.

Long Branch (B-326) - Aquatic life uses are fully supported; however, there is a significant increasing trend in total phosphorus concentration. Significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters. Recreational uses are fully supported.

Clark Fork - There are two monitoring sites along Clark Fork. At the upstream site (**B-325**), aquatic life uses are fully supported. There is a significant decreasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters. Recreational uses are fully supported at this site. At the downstream site (**B-157**), aquatic life uses are fully supported based on macroinvertebrate community data.

Crawford Lake - Crawford Lake is located in Kings Mountain State Park. In an effort to provide public access for swimming and boating in Crawford Lake, triploid grass carp were stocked in 1985, 1987, and 1992; and aquatic herbicides were applied from 1990-1995. Recent efforts to clear access for boating and swimming include continuing to apply aquatic herbicide from 1996-1998, and again in 2000.

Natural Swimming Areas

<i>FACILITY NAME</i>	<i>PERMIT #</i>
<i>RECEIVING STREAM</i>	<i>STATUS</i>
KINGS MOUNTAIN STATE PARK	46-N07
LAKE CRAWFORD	ACTIVE

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM</i>	<i>NPDES#</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
<i>PERMITTED FLOW @ PIPE (MGD)</i>	<i>LIMITATION</i>
LONG BRANCH	SC0025275
US PARK SERVICE/KINGS MTN NATL MIL PARK	MINOR INDUSTRIAL
PIPE #: 001 FLOW: 0.0095	WQL FOR DO,TRC,NH3N

Nonpoint Source Management Program

Land Disposal Activities

Land Application Sites

<i>LAND APPLICATION SYSTEM</i>	<i>ND#</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
SPRAYFIELD	ND0080748
G & W INC.	INDUSTRIAL

Mining Activities

<i>MINING COMPANY</i>	<i>PERMIT #</i>
<i>MINE NAME</i>	<i>MINERAL</i>
YORK COUNTY	1220-91
BIGGERS #2 MINE	SAND/CLAY

Growth Potential

There is a low potential for growth in this watershed, which contains portions of the Towns of Hickory Grove, Smyrna, and Sharon. Public water service is limited to Hickory and Sharon. Although the area is largely rural, residential activity is increasing as a result of the close proximity to the Town of Clover, the City of York, and the Greater Charlotte Metropolitan Area.

03050105-150

(North Pacolet River)

General Description

Watershed 03050105-150 is located in Spartanburg County and consists primarily of the *North Pacolet River* and its tributaries. The watershed occupies 31,549 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Hiwassee series. The erodibility of the soil (K) averages 0.28, and the slope of the terrain averages 10%, with a range of 2-25%. Land use/land cover in the watershed includes: 65.8% forested land, 19.3% agricultural land, 11.4% urban land, 2.5% scrub/shrub land, 0.7% water, and 0.3% barren land.

The North Pacolet River originates in North Carolina and accepts drainage from Vaughn Creek (Lake Lanier) and Wolfe Creek, which originate in South Carolina. After flowing across the state line, the river accepts drainage from Page Creek. Hooper Creek, Collinsville Creek, and Bear Creek enter the river next; all originating in North Carolina. Obed Creek drains into the river at the base of the watershed. There are a few recreational lakes (totaling 103.5 acres) in this watershed and a total of 56.6 stream miles, all classified FW with the exception of Vaughn Creek, which is classified ORW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-099-7	BIO	ORW	VAUGHN CREEK AT UNNUMBERED ROAD, 0.4 MI S OF S-23-319
B-099A	S	FW	LAKE LANIER ON # 1 INLET IN GREENVILLE COUNTY
B-099B	S	FW	LAKE LANIER AT DAM IN GREENVILLE COUNTY
B-719	BIO	FW	NORTH PACOLET RIVER AT S-42-128
B-301	S	FW	PAGE CREEK AT S-42-1258, 1.7 MI SE LANDRUM
B-026	P	FW	NORTH PACOLET RIVER AT S-42-956, 6.5 MI E LANDRUM
B-126	W	FW	NORTH PACOLET RIVER AT S-42-978, 1 MI SE OF FINGERVILLE
B-791	BIO	FW	OBED CREEK AT SR 42

North Pacolet River - There are three monitoring sites along the North Pacolet River. At the upstream site (**B-719**), aquatic life uses are fully supported based on macroinvertebrate community data. At the next downstream site (**B-026**), aquatic life uses are fully supported; however, there is a significant decreasing trend in dissolved oxygen concentration. There is a significant decreasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentrations, and total nitrogen concentrations suggest improving conditions for these parameters. PCB-1254 was measured in the 1996 sediment sample. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. At the downstream site (**B-126**), aquatic life uses are fully supported; however, a very high concentration of lead was measured in 1995. Recreational uses are not supported due to fecal coliform bacteria excursions.

Vaughn Creek (B-099-7) - Aquatic life uses are fully supported based on macroinvertebrate community data.

Lake Lanier - There are two monitoring sites on Lake Lanier. At the uptake site (**B-099A**), aquatic life uses are fully supported; however, there is a significant decreasing trend in dissolved oxygen concentration and a significant increasing trend in turbidity. There is a significant decreasing trend in pH. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions. At the downlake site (**B-099B**), aquatic life uses are also fully supported. There is a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported at this site.

Page Creek (B-301) – Aquatic life uses are fully supported. There is a significant decreasing trend in pH. A significant decreasing trend in turbidity suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

Obed Creek (B-791) - Aquatic life uses are fully supported based on macroinvertebrate community data.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD)	NPDES# TYPE LIMITATION
NORTH PACOLET RIVER SSSD/FINGERVILLE WWTP PIPE #: 001 FLOW: 0.020	SC0047759 MINOR DOMESTIC EFFLUENT
NORTH PACOLET RIVER MILLIKEN & CO./NEW PROSPECT MILL PIPE #: 001 FLOW: 0.47 WQL FOR DO,TRC,NH3N	SC0023540 MINOR INDUSTRIAL WATER QUALITY
NORTH PACOLET RIVER CITY OF LANDRUM/PAGE CREEK WWTP PIPE #: 001 FLOW: 0.5 (PHASE I) PIPE #: 001 FLOW: 1.0 (PHASE II) PIPE #: 001 FLOW: 2.0 (PROPOSED) WQL FOR DO,TRC,NH3N; UNDER CONSTRUCTION	SC0026875 MINOR DOMESTIC WATER QUALITY WATER QUALITY WATER QUALITY
NORTH PACOLET RIVER LITTLE ACRES SAND CO./N. PACOLET MINE PIPE #: 001 FLOW: M/R	SCG730177 MINOR INDUSTRIAL EFFLUENT
OBED CREEK HB SWOFFORD VOCATIONAL SCHOOL PIPE #: 001 FLOW: 0.0045 WQL FOR NH3N	SC0028037 MINOR DOMESTIC WATER QUALITY
PAGE CREEK CITY OF LANDRUM/PAGE CREEK WWTP PIPE #: 001 FLOW: 0.5 WQL FOR BOD5,TRC,NH3N; TO BE PHASED OUT	SC0026875 MINOR DOMESTIC WATER QUALITY

Nonpoint Source Management Program

Mining Activities

<i>MINING COMPANY</i>	<i>PERMIT #</i>
<i>MINE NAME</i>	<i>MINERAL</i>
LITTLE ACRES SAND CO. NORTH PACOLET RIVER MINE	1037-83 SAND
SLATER PROPERTIES NORTH PACOLET SAND	1001-83 SAND
CHAPMAN GRADING & CONCRETE CO. MCMILLAN MINE	0383-83 SAND & GRAVEL

Water Supply

<i>WATER USER</i>	<i>TOTAL PUMP. CAPACITY (MGD)</i>
<i>STREAM</i>	<i>RATED PUMP. CAPACITY (MGD)</i>
CITY OF LANDRUM	0.2
VAUGHN CREEK TRIBUTARY	0.2
CITY OF LANDRUM	2.0
LAKE LANIER - VAUGHN CREEK	1.0
TOWN OF TRYON, N.C.	9.0
LAKE LANIER	6.0

Growth Potential

There is a low potential for growth in this watershed, which contains a portion of the City of Landrum. I-26 bisects the watershed and some growth may result around interstate interchanges.

03050105-160
(South Pacolet River)

General Description

Watershed 03050105-160 is located in Spartanburg County and consists primarily of the **South Pacolet River** and its tributaries. The watershed occupies 58,528 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil series. The erodibility of the soil (K) averages 0.28, and the slope of the terrain averages 9%, with a range of 2-25%. Land use/land cover in the watershed includes: 60.7% forested land, 21.7% agricultural land, 11.9% urban land, 3.4% water, 1.7% scrub/shrub land, and 0.5% barren land.

The South Pacolet River originates near Glassy Mountain and accepts drainage from Green Creek, Belue Creek, Jamison Mill Creek, Spivey Creek (Clear Branch), and Motlow Creek (Easley Creek, Holston Creek) before forming Lake Bowen (Alexander Creek, Turkey Creek). The South Pacolet River flows out of Lake Bowen to then form the South Pacolet River Reservoir #1 (Mud Creek) which is also known as Spartanburg Reservoir #1 (301 acres). There are numerous ponds and lakes in this watershed (totaling 1,483.3 acres) and 94.2 stream miles. With the exception of the headwaters of the South Pacolet River downstream to Hwy. 116, which is classified TN, all streams in the watershed are classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-720	BIO	FW	SOUTH PACOLET RIVER AT S-42-183
B-103	S	FW	SPIVEY CREEK AT S-42-208, 2.5 MI SSE OF LANDRUM
B-104	BIO	FW	SPIVEY CREEK AT SR 209
B-790	BIO	FW	MOTLOW CREEK AT SR 888
B-302	S	FW	SOUTH PACOLET RIVER AT S-42-866, 1 MI SE CAMPOBELLO
B-340	W	FW	LAKE BOWEN NEAR HEADWATERS, 0.4 KM W OF S-42-37
B-339	W	FW	LAKE BOWEN IN FOREBAY NEAR DAM
B-113	S	FW	SPARTANBURG RESERVOIR #1 ON S-42-213 NE OF INMAN

South Pacolet River - There are two monitoring sites along the South Pacolet River. At the upstream site (**B-720**), aquatic life uses are fully supported based on macroinvertebrate community data. At the downstream site (**B-302**), aquatic life uses are also fully supported; however, a very high concentration of lead was measured in 1995. There is a significant decreasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand, total suspended solids, and turbidity suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

Spivey Creek – There are two monitoring sites along Spivey Creek. At the upstream site (**B-103**), aquatic life uses are fully supported. There is a significant decreasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions. At the

downstream site (**B-104**), aquatic life uses are fully supported based on macroinvertebrate community data.

Motlow Creek (B-790) – Aquatic life uses are partially supported based on macroinvertebrate community data.

Lake Bowen - Lake William C. Bowen is a 1600-acre impoundment on the South Pacolet River in Spartanburg County, with a maximum depth of approximately 41 feet (12.5 m) and an average depth of 15 feet (4.7 m). Lake Bowen's watershed comprises 82 square miles (212.6 km²). There are two monitoring sites on Lake Bowen (**B-340, B-339**). Aquatic life and recreational uses are fully supported at both sites.

Spartanburg Reservoir #1 (B-113) - Aquatic life uses are fully supported; however, there is a significant decreasing trend in dissolved oxygen. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported; however, there is a significant increasing trend in fecal coliform bacteria concentrations.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM

FACILITY NAME

PERMITTED FLOW @ PIPE (MGD)

NPDES#

TYPE

LIMITATION

MOTLOW CREEK

LINKS O TRYON GOLF COMMUNITY

PIPE #: 001 FLOW: 0.024

WQL FOR DO,TRC,NH3N

SC0042684

MINOR DOMESTIC

WATER QUALITY

SOUTH PACOLET RIVER

SPARTANBURG WATER SYSTEM WWTP/SIMMS WWTP

PIPE #: 001 FLOW: 0.004 (PHASE I)

PIPE #: 001 FLOW: 0.012 (PHASE II)

SC0030279

MINOR DOMESTIC

EFFLUENT

EFFLUENT

SOUTH PACOLET RIVER

SPARTANBURG WATER SYSTEM/SIMMS WTP

PIPE #: 001 FLOW: 1.17

WQL FOR TRC

SCG643002

MINOR DOMESTIC

WATER QUALITY

SOUTH PACOLET RIVER

LITTLE ACRES SAND CO./S.PACOLET MINE

PIPE #: 001 FLOW: M/R

SCG730178

MINOR INDUSTRIAL

EFFLUENT

SPIVEY CREEK

CITY OF LANDRUM/WTP

PIPE #: 001 FLOW: 0.032

WQL FOR TRC

SCG645029

MINOR DOMESTIC

WATER QUALITY

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME</i>	<i>PERMIT #</i>
<i>FACILITY TYPE</i>	<i>STATUS</i>
POTEAT SHORT TERM C&D LANDFILL	422903-1301
C&D LANDFILL	-----

Land Application Sites

<i>LAND APPLICATION SYSTEM</i>	<i>ND#</i>
<i>FACILITY NAME</i>	<i>TYPE</i>
SPRAYFIELD	ND0067342
CAMPOBELLO-GRAMBLING SCHOOL	DOMESTIC

Mining Activities

<i>MINING COMPANY</i>	<i>PERMIT #</i>
<i>MINE NAME</i>	<i>MINERAL</i>
LITTLE ACRES SAND CO.	0805-83
SOUTH PACOLET RIVER MINE	SAND

Water Supply

<i>WATER USER</i>	<i>TOTAL PUMP. CAPACITY (MGD)</i>
<i>STREAM</i>	<i>RATED PUMP. CAPACITY (MGD)</i>
SPARTANBURG WATER SYSTEM	-----
SOUTH PACOLET RIVER RES.#1	64.0

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains the Town of Campobello and a portion of the City of Landrum. I-26 bisects the watershed and some growth may result around interstate interchanges.

03050105-170

(Pacolet River)

General Description

Watershed 03050105-170 extends through Spartanburg and Cherokee Counties and consists primarily of the **Pacolet River** and its tributaries from its origin at the confluence of the North and South Pacolet Rivers to Lawsons Fork Creek. The watershed occupies 73,661 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Pacolet series. The erodibility of the soil (K) averages 0.28, and the slope of the terrain averages 11%, with a range of 2-45%. Land use/land cover in the watershed includes: 51.3% forested land, 28.7% agricultural land, 14.5% urban land, 3.3% scrub/shrub land, 1.6% water, and 0.6% barren land.

The Pacolet River is formed by the confluence of the North Pacolet River Watershed and the South Pacolet River Watershed. Downstream from the confluence, the Pacolet River accepts drainage from Thompson Creek and forms Lake Blalock (760 acres). Streams draining into Lake Blalock include Buck Creek, Little Buck Creek (Ezell Branch, Cudds Creek, Greenes Lake), and Casey Creek (Carlisle Branch). Downstream from the lake, the Pacolet River accepts drainage from Cherokee Creek (Little Cherokee Creek), Island Creek (Zekial Creek, Double Branch), Pole Bridge Branch, Peters Creek, Cinder Branch, Turkey Hen Branch, Quinn Branch, and Mill Branch. There are numerous lakes and ponds (totaling 978.8 acres) in this watershed and a total of 102.6 stream miles, all classified FW. Cowpens National Battlefield Site is located between Island Creek and Zekial Creek.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-028	S	FW	PACOLET R. AT S-42-55, BELOW CONFL. OF N. & S. PACOLET RIVERS
B-783	BIO	FW	BUCK CREEK AT PEACH SHED RD
B-259	S	FW	LITTLE BUCK CREEK AT COUNTY ROAD, 2.3 MI SW OF CHESNEE
B-347	W	FW	LAKE BLALOCK IN FOREBAY NEAR DAM
B-163A	S	FW	PACOLET RIVER AT BRIDGE ON S-42-737, 2.9 MI NW OF COWPENS
B-191	S	FW	POTTER BRANCH ON ROAD 30, BELOW OUTFALL FROM HOUSING PROJECT
B-331	W	FW	PACOLET RIVER AT S-42-59, BEACON LIGHT ROAD IN CLIFTON

Pacolet River - There are three monitoring sites along this section of the Pacolet River. Aquatic life uses are fully supported at the upstream site (**B-028**), and significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and total suspended solids concentration suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. Aquatic life and recreational uses are fully supported further downstream (**B-163A**); however, there is a significant increasing trend in total phosphorus concentration. There is a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. At the downstream site (**B-331**), aquatic life uses are fully supported, and recreational uses are partially supported due to fecal coliform bacteria excursions.

Buck Creek (B-783) – Aquatic life uses are fully supported based on macroinvertebrate community data.

Little Buck Creek (B-259) - Aquatic life uses are fully supported. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions.

Lake Taylor Blalock (B-347) - Lake Blalock in Spartanburg County is a 760-acre impoundment on the Pacolet River, with a maximum depth of approximately 49.5 feet (15 m) and an average depth of 5.6 feet (1.7 m). Lake Blalock's watershed comprises 273 square miles (707 km²), which includes Spartanburg Reservoir #1 and Lake Bowen, and extends into North Carolina. Aquatic life and recreational uses are fully supported.

Potter Branch (B-191) - Aquatic life uses are fully supported. There is a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentration suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION
PACOLET RIVER SSSD/CLIFTON WWTP PIPE #: 001 FLOW: 0.29	SC0042668 MINOR DOMESTIC EFFLUENT
PACOLET RIVER ARTEVA SPECIALTIES SARL PIPE #: 002 FLOW: 0.800 PIPE #: 004 FLOW: 0.061 PIPE #: 010 FLOW: 0.216 WQL FOR DO,TRC	SC0002798 MAJOR INDUSTRIAL EFFLUENT EFFLUENT WATER QUALITY
PACOLET RIVER SSSD/TOWN OF COWPENS/PACOLET RIVER PIPE #: 001 FLOW: 1.5 WQL FOR TRC	SC0045624 MAJOR DOMESTIC WATER QUALITY
PROPOSED PACOLET RIVER SSSD/FAIRFOREST REGIONAL WWTF PIPE #: 001 FLOW: 30.0	SC0020435 MAJOR DOMESTIC WQL FOR TRC, NH3N
PACOLET RIVER TRIBUTARY OMEGA CHEMICALS, INC. PIPE #: 001 FLOW: 1.12	SCG250055 MINOR INDUSTRIAL EFFLUENT

CHEROKEE CREEK
SAXONIA-FRANKE OF AMERICA, INC.
PIPE #: 001 FLOW: 0.003

SCG250176
MINOR INDUSTRIAL
EFFLUENT

CHEROKEE CREEK
ARTEVA SPECIALTIES SARL
PIPE #: 001 FLOW: 0.08

SC0002798
MAJOR INDUSTRIAL
EFFLUENT

LITTLE CHEROKEE CREEK
SPARTANBURG/LAKE BLALOCK WTP
PIPE #: 001 FLOW: M/R

SCG645010
MINOR DOMESTIC
EFFLUENT

LITTLE BUCK CREEK
CITY OF CHESNEE/MAIN PLANT WWTP
PIPE #: 001 FLOW: 0.500
WQL FOR NH3N

SC0025763
MINOR DOMESTIC
WATER QUALITY

PETERS CREEK
RR DONNELLEY & SONS CO.
PIPE #: 001 FLOW: 0.1202
WQL FOR TRC; NH3N IN SUMMER & WINTER

SC0036102
MINOR INDUSTRIAL
WATER QUALITY

PETERS CREEK
SPECIALTY INDUSTRIAL PRODUCTS
PIPE #: 001 FLOW: 0.0097
WQL FOR TRC

SC0037826
MINOR INDUSTRIAL
WATER QUALITY

PETERS CREEK
SSSD IDLEWOOD SD
PIPE #: 001 FLOW: 0.08
WQL FOR TRC,NH3N

SC0030554
MINOR DOMESTIC
WATER QUALITY

PETERS CREEK TRIBUTARY
AIR LIQUIDE AMERICA CORP.
PIPE #: 001 FLOW: M/R

SCG250046
MINOR INDUSTRIAL
EFFLUENT

ISLAND CREEK
TALL TALES FISH CAMP
PIPE #: 001 FLOW: 0.0136

SC0031577
MINOR DOMESTIC
EFFLUENT

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME
FACILITY TYPE

PERMIT #
STATUS

IRENE BISHOP
SHORT TERM C&D LANDFILL

422904-1301

DAVID STOLTZ
SHORT TERM C&D LANDFILL

422422-1301

HASKELL SEXTON
SHORT TERM C&D LANDFILL

422484-1301

J. DAVID MOORE INERT IND. LANDFILL
INDUSTRIAL

IWP-224

J DAVID MOORE INERT IND. LANDFILL
CONSTRUCTION

CWP-047

HOECHST CELANESE C&D LANDFILL
INDUSTRIAL C&D LANDFILL

423312-1201 (SCD056811367)

Land Application Sites

***LAND APPLICATION SYSTEM
FACILITY NAME***

***ND#
TYPE***

SPRAYFIELD
SPARTANBURG WATER SYSTEM/SIMMS WTP

ND0074101
DOMESTIC

SPRAYFIELD
SPARTANBURG WATER SYSTEM/LAKE BLALOCK WTP

ND0077135
DOMESTIC

Mining Activities

***MINING COMPANY
MINE NAME***

***PERMIT #
MINERAL***

CHAPMAN GRADING & CONCRETE CO., INC.
CHAPMAN SAND PLANT #6

1081-83
SAND

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains the City of Chesnee, the Town of Mayo, and portions of the City of Spartanburg and the Town of Cowpens. In addition to Spartanburg area in the lower region of the watershed, growth is associated primarily with Chesnee and Cowpens, both having sewer infrastructure. Industrial growth in particular is expected along the I-85 corridor and major roads with I-85 interchanges.

03050105-180
(Lawsons Fork Creek)

General Description

Watershed 03050105-180 is located in Spartanburg County and consists primarily of **Lawsons Fork Creek** and its tributaries. The watershed occupies 54,415 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil series. The erodibility of the soil (K) averages 0.28, and the slope of the terrain averages 8%, with a range of 2-15%. Land use/land cover in the watershed includes: 46.1% urban land, 34.5% forested land, 17.4% agricultural land, 1.0% scrub/shrub land, 0.6% barren land, and 0.4% water.

Lawsons Fork Creek originates near and flows past the City of Spartanburg before draining into the Pacolet River. Lawsons Fork Creek accepts drainage from Greene Creek (Meadow Creek), Camp Creek, Fawn Branch, Big Shoally Creek (Little Shoally Creek, Flatwood Lake, Fairview Lake), Betty Green Creek (Waldrops Lake), Chinquapin Creek, and Fourmile Branch. There are several ponds and lakes (totaling 145.2 acres) in this watershed and a total of 72.0 stream miles, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-221	S/BIO	FW	LAWSONS FORK CREEK AT S-42-40, BELOW INMAN MILL EFFLUENT
B-277	S	FW	LAWSONS FORK CREEK AT S-42-218, 2.7 MI SSE OF INMAN
B-278	S	FW	LAWSONS FORK CREEK AT UNNUMBERED ROAD BELOW MILLIKEN CHEMICAL
B-531	BIO	FW	MEADOW CREEK AT SR 56
BL-005	S	FW	LAWSONS FORK CREEK AT S-42-79 AT VALLEY FALLS
BL-001	P/BIO	FW	LAWSONS FORK CREEK AT S-42-108

Lawsons Fork Creek - There are five monitoring sites along Lawsons Fork Creek and there is a significant decreasing trend in pH at all sites. At the furthest upstream site (**B-221**), aquatic life uses are partially supported based on macroinvertebrate community data; however, there is a significant increasing trend in total phosphorus concentration. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

At the next site downstream (**B-277**), aquatic life uses are fully supported; however, there is a significant increasing trend in total phosphorus concentration. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

Further downstream (**B-278**), aquatic life uses are fully supported; however, there is a significant increasing trend in total phosphorus concentration. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal

coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations. At the next site downstream (**BL-005**), aquatic life uses are fully supported; however, there is a significant increasing trend in total phosphorus concentration. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

At the furthest downstream site (**BL-001**), aquatic life uses are partially supported based on macroinvertebrate community data. A very high concentration chromium was measured in 1997 and there is a significant increasing trend in total nitrogen concentration. In sediment, a high concentration of chromium and the PAHs benzo(b)fluoranthene, benzo(a)pyrene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene, benzo(ghi)perylene, benzo(a)anthracene were detected in the 1998 sample. Significant decreasing trends in five-day biochemical oxygen demand and total suspended solids suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, compounded by a significant increasing trend in fecal coliform bacteria concentrations.

Meadow Creek (B-531) - Aquatic life uses are fully supported based on macroinvertebrate community data.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION
LAWSONS FORK CREEK MILLIKEN & CO./DEWEY PLT PIPE #: 001 FLOW: 0.374 WQL FOR DO,TRC,NH3N	SC0003581 MAJOR INDUSTRIAL WATER QUALITY
LAWSONS FORK CREEK SSSD/LAWSONS FORK PLANT PIPE #: 001 FLOW: 9.0-15.5 TO BE ELIMINATED; TIED INTO SSSD/FAIRFOREST WWTF	SC0020427 MAJOR DOMESTIC WQL FOR DO,TRC,NH3N
LAWSONS FORK CREEK CITY OF INMAN PIPE #: 001 FLOW: 0.477 (PHASE I) PIPE #: 001 FLOW: 1.000 (PHASE II) WQL FOR DO,TRC,NH3N	SC0021601 MINOR DOMESTIC WATER QUALITY WATER QUALITY
LAWSONS FORK CREEK INMAN MILLS WATER DISTRICT PIPE #: 001 FLOW: 0.175 WQL FOR DO,TRC,NH3N	SC0024414 MINOR DOMESTIC WATER QUALITY
LAWSONS FORK CREEK WISE FOODS INC. PIPE #: 001 FLOW: M/R	SCG250113 MINOR INDUSTRIAL EFFLUENT

LAWSONS FORK CREEK MILLIKEN/VALLEY FALLS PLT PIPE #: 001 FLOW: M/R CEASED OPERATION	SC0002747 MINOR INDUSTRIAL EFFLUENT
LAWSONS FORK CREEK TRIBUTARY DRAPER CORPORATION PIPE #: 001 FLOW: M/R PIPE #: 002 FLOW: M/R	SCR001582 MINOR INDUSTRIAL EFFLUENT EFFLUENT
GREENE CREEK PHELPS DODGE HIGH PERFORMANCE PIPE #: 001 FLOW: M/R	SCG250039 MINOR INDUSTRIAL EFFLUENT
MEADOW CREEK INMAN STONE COMPANY, INC. PIPE #: 001 FLOW: M/R	SCG730084 MINOR INDUSTRIAL EFFLUENT
CHINQUAPIN CREEK NORTHSIDE ROBO CAR WASH PIPE #: 001 FLOW: M/R	SCG750002 MINOR INDUSTRIAL EFFLUENT
FOURMILE BRANCH WILLIAMS ENERGY/SPARTANBURG TERMINAL PIPE #: 001, 002 FLOW: M/R	SC0003549 MINOR INDUSTRIAL EFFLUENT
FOURMILE BRANCH ASHLAND PETROLEUM/SPARTANBURG PIPE #: 001, 002 FLOW: M/R	SCG340010 MINOR INDUSTRIAL EFFLUENT
FOURMILE BRANCH CROWN CENTRAL PETROLEUM CORP. PIPE #: 001 FLOW: M/R	SCG340007 MINOR INDUSTRIAL EFFLUENT
FOURMILE BRANCH MOTIVA ENTERPRISES LLC PIPE #: 001, 002 FLOW: M/R	SCG340001 MINOR INDUSTRIAL EFFLUENT
FOURMILE BRANCH CONOCO INC./SPARTANBURG TERM. PIPE #: 001 FLOW: M/R	SCG340006 MINOR INDUSTRIAL EFFLUENT
FOURMILE BRANCH PHILLIPS PIPELINE/SPARTANBURG PIPE #: 001 FLOW: 0.051 PIPE #: 002 FLOW: 0.428	SCG340011 MINOR INDUSTRIAL EFFLUENT EFFLUENT
FOURMILE BRANCH TRANSMONTAIGNE TERMINAL/SPARTANBURG PIPE #: 001 FLOW: M/R	SCG340002 MINOR INDUSTRIAL EFFLUENT

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME</i> <i>FACILITY TYPE</i>	<i>PERMIT #</i> <i>STATUS</i>
KOHLER COMPANY IND. LANDFILL INDUSTRIAL	422442-1601 (IWP-228) -----
PAR GRADING & HAULING SHORT TERM C&D LANDFILL	422421-1301 (422627-1701) -----
DRAPER CORPORATION LANDFILL INDUSTRIAL	IWP-103 (SCD003340908) -----
BILL GARRETT INDUSTRIAL	IWP-184 -----
SOUTHERN WOOD PIEDMONT INDUSTRIAL	IWP-048 (SCT00001154) -----
SOUTHERN WOOD PIEDMONT INDUSTRIAL	IWP-067 (SCT00001154) -----

Land Application Sites

<i>LAND APPLICATION SYSTEM</i> <i>FACILITY NAME</i>	<i>ND#</i> <i>TYPE</i>
SPRAYFIELD KOHLER COMPANY	ND0000892 INDUSTRIAL

Mining Activities

<i>MINING COMPANY</i> <i>MINE NAME</i>	<i>PERMIT #</i> <i>MINERAL</i>
INMAN STONE COMPANY., INC. INMAN QUARRY	0630-83 GRANITE

Growth Potential

There is a high potential for growth in this watershed, which contains the City of Inman and a portion of the City of Spartanburg. Industrial growth in particular is expected along the I-85 corridor and major roads with I-85 interchanges. There are also industrial developmental pressures along I-26, U.S. Hwy. 29, and U.S. Hwy. 221.

Watershed Protection and Restoration Strategies

Special Projects

Urban Watershed Protection and Enhancement through Stewardship and Education

The objective of this project, funded by a USEPA Section 319 grant of the Clean Water Act and currently being implemented by Clemson University, is to develop stewardship of urban-rural watersheds located in two major metropolitan areas of northwestern South Carolina. Princess Creek in Greenville County and Lawsons Fork Creek in Spartanburg County are targeted for the project efforts. Fecal coliform bacteria is a major concern in both watersheds. Sources of fecal coliform bacteria may be traced to mini-farms, faulty septic systems, wild animals, or improper housing and management of family pets. It may also enter creeks when the capacity of municipal waste treatment facilities is exceeded. Exceeding treatment capacity may be due to major rainfall events adding water to the system or when population growth and waste input exceeds waste treatment capacity. This occurs in watersheds that experience rapid urban, suburban, and rural development such as the Upstate region of South Carolina.

The strategy is to develop a grass roots movement in watersheds where none presently exists, educate stakeholders and managers on water quality protection and proper watershed management. Specifically, the strategy has a monitoring program and several Community Involvement and Education objectives. Volunteer stream monitoring teams will be developed to foster stewardship in targeted watersheds. Stream teams will be developed from area schools where programs like Adopt-a Stream will be made available. Existing civic, environmental groups, and other interested citizen groups will be provided presentations to develop stewardship interests. Educational materials will be developed for the specific areas of concern that were defined by the monitoring program, and will include Farm/Home-a-Syst type materials for pollution prevention. The Stewardship group, with the direction of the lead contact and the assistance of NRCS and Conservation District personnel, will develop a community water quality newsletter, and provide water quality educational materials at existing river/water fairs and city festivals.

03050105-190

(Pacolet River)

General Description

Watershed 03050105-190 is located in Union, Cherokee, and Spartanburg Counties and consists primarily of the **Pacolet River** and its tributaries from Lawsons Fork Creek to the Broad River. The watershed occupies 65,170 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Madison-Cecil-Pacolet series. The erodibility of the soil (K) averages 0.27, and the slope of the terrain averages 10%, with a range of 2-25%. Land use/land cover in the watershed includes: 71.9% forested land, 13.4% scrub/shrub land, 11.2% agricultural land, 2.3% urban land, 0.9% barren land, and 0.3% water.

This section of the Pacolet River accepts drainage from its upper reach (03050105-170), together with Richland Creek, Harvey Branch, Browns Branch, Plum Branch, and Mill Branch. Further downstream, Mill Creek (Jumping Run Creek, Eison Branch) enters the river followed by Sandy Run Creek, Peter Hawks Creek, Gault Creek, another Mill Creek, another Gault Creek, Big Creek, Kendrick Branch, and Reedy Branch. The Pacolet River drains into the Broad River. There are a few ponds and lakes (totaling 90.8 acres) in this watershed and a total of 114.0 stream miles, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
BP-001	S	FW	PACOLET RIVER ABOVE DAM AT PACOLET MILLS
B-780	BIO	FW	MILL CREEK AT SR 73
B-048	P	FW	PACOLET RIVER AT SC 105, 6 MI ABOVE CONFLUENCE WITH BROAD RIVER

Pacolet River - There are two monitoring sites along this section of the Pacolet River, and a significant decreasing trend in five-day biochemical oxygen demand at both sites suggests improving conditions for this parameter. At the upstream site (**BP-001**), aquatic life uses are fully supported. There is a significant decreasing trend in pH. Aquatic life uses are also fully supported at the downstream site (**B-048**). Recreational uses are not supported at either site due to fecal coliform bacteria excursions.

Mill Creek (B-780) – Aquatic life uses are partially supported based on macroinvertebrate community data.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM

FACILITY NAME

PERMITTED FLOW @ PIPE (MGD)

PACOLET RIVER
SSSD/PACOLET MILLS WWTP
PIPE #: 001 FLOW: 0.3
PACOLET RIVER TRIBUTARY

NPDES#

TYPE

LIMITATION

SC0044717
MINOR DOMESTIC
EFFLUENT
SCG730293

VULCAN MATERIALS CO./PACOLET QUARRY
PIPE #: 001 FLOW: M/R

MINOR INDUSTRIAL
EFFLUENT

MILL CREEK
SPARTAN MILLS/ROSEMONT MILL
PIPE #: 001 FLOW: 0.0122

SC0037371
MINOR INDUSTRIAL
EFFLUENT

Nonpoint Source Management Program

Mining Activities

MINING COMPANY
MINE NAME

PERMIT #
MINERAL

DEATON SAND COMPANY
DEATON SAND PIT

1016-83
SAND

VULCAN MATERIALS CO.
PACOLET QUARRY

0062-83
GRANITE

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains portions of the Towns of Jonesville and Pacolet. Public water and sewer services are available in Jonesville, and residential and commercial uses center around the town and along S.C. Hwy. 9.

03050106-010

(Broad River)

General Description

Watershed 03050106-010 is located Union, Chester, and Fairfield Counties and consists primarily of the **Broad River** and its tributaries from the Pacolet River to the Tyger River. The watershed occupies 77,201 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Wilkes-Pacolet-Winnsboro series. The erodibility of the soil (K) averages 0.24, and the slope of the terrain averages 21%, with a range of 6-40%. Land use/land cover in the watershed includes: 77.3% forested land, 10.4% agricultural land, 8.4% scrub/shrub land, 2.7% water, 0.7% barren land, and 0.5% urban land.

This section of the Broad River accepts drainage from its upper reach, together with Robertson Branch, Fanning Creek (Sharps Creek), George Branch, Osborn Branch, and the Turkey Creek Watershed. Hughes Creek (Lake John D. Long, Vanderford Branch) enters the river next followed by the Browns Creek Watershed, McCluney Creek, Little Turkey Creek, Clarks Creek, Neals Creek (Hobsons Creek), Mineral Creek, Coss Creek, and the Sandy River Watershed. There are several lakes and ponds (totaling 150.8 acres) in this watershed and 155.5 stream miles, all classified FW. The lower three-quarters of the watershed, below Turkey Creek, resides within the Sumter National Forest.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-344	W	FW	LAKE JOHN D. LONG IN FOREBAY NEAR DAM
B-778	BIO	FW	NEALS CREEK AT SR 86
B-046	P	FW	BROAD RIVER AT SC 72/215/121, 3 MI E OF CARLISLE

Broad River (B-046) – Aquatic life uses are fully supported. There is a significant decreasing trend in pH. A very high concentration of cadmium was measured in 1997. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Neals Creek (B-778) – Aquatic life uses are fully supported based on macroinvertebrate community data.

Lake John D. Long (B-344) - Lake John D. Long is a 78-acre impoundment on Hughes Creek in Union County, with a maximum depth of approximately 31 feet (9.4 m) and an average depth of 16 feet (4.9 m). Lake Long's watershed comprises approximately 1.9 square miles (5.0 km). In an effort to provide access for boating and fishing, triploid grass carp were stocked in 1991 and aquatic herbicides were applied in 1986, 1987, 1991 and 1994-1996. More recent efforts to clear access for boating and fishing include applying aquatic herbicide in 2000. Aquatic life uses are not supported due to pH excursions. Recreational uses are fully supported.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM</i> <i>FACILITY NAME</i> <i>PERMITTED FLOW @ PIPE (MGD)</i> <i>COMMENT</i>	<i>NPDES#</i> <i>TYPE</i> <i>LIMITATION</i>
BROAD RIVER CONE MILLS/CARLISLE PLT PIPE #: 001 FLOW: 2.0 PIPE #: 002 FLOW: 0.04 PIPE #: 003 FLOW: 0.12 WQL FOR TRC	SC0001368 MAJOR INDUSTRIAL EFFLUENT WATER QUALITY EFFLUENT
BROAD RIVER SCE&G/NEAL SHOALS HYDRO PIPE #: 001 FLOW: M/R	SC0002186 MINOR INDUSTRIAL EFFLUENT
BROAD RIVER LOCKHART TREATMENT FACILITY PIPE #: 001 FLOW: 0.169	SC0003051 MINOR DOMESTIC EFFLUENT
BROAD RIVER CLARIANT CORP./LEEDS PLT PIPE #: 001 FLOW: M/R	SC0022756 MINOR INDUSTRIAL EFFLUENT

Nonpoint Source Management Program

Camp Facilities

<i>FACILITY NAME/TYPE</i> <i>RECEIVING STREAM</i>	<i>PERMIT #</i> <i>STATUS</i>
LEEDS HUNT CAMP/FAMILY BROAD RIVER TRIBUTARY	12-307-0008 ACTIVE
WOODS FERRY/FAMILY BROAD RIVER	12-307-0005 ACTIVE

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME</i> <i>FACILITY TYPE</i>	<i>PERMIT #</i> <i>STATUS</i>
BENNETT LANDFILL (SHORT TERM) CONSTRUCTION	122901-1301 -----
BENNETT C&D LANDFILL (LONG TERM) CONSTRUCTION	122493-1201 -----

Mining Activities

<i>MINING COMPANY</i> <i>MINE NAME</i>	<i>PERMIT #</i> <i>MINERAL</i>
MCINTYRE SAND CO., INC. CUDD SAND MINE	0909-87 SAND

MCINTYRE SAND CO., INC. JORDAN FOWLER TRACT	1243-87 SAND
MCINTYRE SAND CO., INC. ASKEW MINE	0684-87 SAND
SLOAN CONSTRUCTION CO., INC. LOCKHART MINE	0471-87 SAND
UNION COUNTY CARLISLE PIT	0311-87 SAND

Water Supply

<i>WATER USER STREAM</i>	<i>TOTAL PUMP. CAPACITY (MGD) RATED PUMP. CAPACITY (MGD)</i>
CITY OF UNION	23.8
BROAD RIVER	8.0
CARLISLE CONE MILLS	8.1
BROAD RIVER	5.7

Growth Potential

There is a low potential for future growth in this watershed, which contains the Town of Lockhart and a portion of the Town of Carlisle. Public water and sewer services are available in Carlisle. The Sumter National Forest effectively excludes a large portion of the watershed from development.

03050106-020

(Turkey Creek)

General Description

Watershed 03050106-020 is located in York and Chester Counties and consists primarily of *Turkey Creek* and its tributaries. The watershed occupies 93,719 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Wilkes-Cecil-Madison series. The erodibility of the soil (K) averages 0.26, and the slope of the terrain averages 12%, with a range of 2-40%.

Land use/land cover in the watershed includes: 77.5% forested land, 10.8% scrub/shrub land, 9.7% agricultural land, 1.2% urban land, 0.5% barren land, and 0.3% water.

Turkey Creek originates near the City of York, flowing out of Caldwell Lake and accepting drainage from Ross Branch (Lake Carolyn), Dry Fork, Little Turkey Creek (McClures Branch, Lindsey Creek), and Bryson Creek. Further downstream, Blue Branch enters Turkey Creek followed by Rainey Branch (Palmer Branch), Susybole Creek (Little Susybole Creek), Mill Creek (Rodens Creek), and McKelvy Creek. There are a few ponds and lakes (totaling 100.5 acres) in this watershed and a total of 190.9 stream miles, all classified FW. The lower tip of the watershed resides within the Sumter National Forest.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-086	S	FW	ROSS BRANCH AT SC 49, SW OF YORK
B-136	W/BIO	FW	TURKEY CREEK AT SC 9, 14 MI NW OF CHESTER

Turkey Creek (B-136) - Aquatic life uses are fully supported based on macroinvertebrate community data and physical/chemical data. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Ross Branch (B-086) - Aquatic life uses are fully supported. There is a significant decreasing trend in pH. Recreational uses are not supported due to fecal coliform bacteria excursions.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION</i>
LITTLE SUSYBOLE CREEK HANSON AGGREGATES SE/LOWRY QUARRY PIPE #: 001 FLOW: M/R	SCG730085 MINOR INDUSTRIAL EFFLUENT

SUSYBOLE CREEK TRIBUTARY
 MACK ESTATES
 PIPE #: 001 FLOW: 0.02
 WQL FOR DO,TRC,NH3N; NOT CONSTRUCTED

SC0043095
 MINOR DOMESTIC
 WATER QUALITY

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME</i> <i>FACILITY TYPE</i>	<i>PERMIT #</i> <i>STATUS</i>
CARTERS LANDSCAPE & FARMS INDUSTRIAL	IWP-209 -----

Mining Activities

<i>MINING COMPANY</i> <i>MINE NAME</i>	<i>PERMIT #</i> <i>MINERAL</i>
REA CONSTRUCTION CO. SAND PIT #123 - TURKEY CREEK MINE	0177-91 SAND
REA CONSTRUCTION CO. SAND PIT #124 - SUSYBOLE CREEK MINE	0180-23 SAND
HANSON AGGREGATES SE LOWRYS QUARRY	0759-91 GRANITE

Water Supply

<i>WATER USER</i> <i>STREAM</i>	<i>TOTAL PUMP. CAPACITY (MGD)</i> <i>RATED PUMP. CAPACITY (MGD)</i>
CITY OF YORK	4.1
CALDWELL LAKE	2.2
CITY OF YORK	4.0
ROSS BRANCH TRIBUTARY - LAKE CAROLYN	2.2

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains portions of the City of York and the Towns of Lowrys, Sharon, and McConnells. The City of York is located at the top of the watershed, and extends water and sewer service in and around the city. Residential and commercial development is expected to grow in these areas. The Sumter National Forest effectively excludes the lower tip of the watershed from development.

03050106-030

(Browns Creek)

General Description

Watershed 03050106-030 is located in Union County and consists primarily of ***Browns Creek*** and its tributaries. The watershed occupies 33,945 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Madison-Cecil-Wilkes series. The erodibility of the soil (K) averages 0.26, and the slope of the terrain averages 13%, with a range of 2-40%. Land use/land cover in the watershed includes: 65.1% forested land, 17.3% agricultural land, 11.4% scrub/shrub land, 5.7% urban land, 0.3% barren land, and 0.2% water.

Big Browns Creek (Knox Creek, Bethlehem Creek, Meng Creek) originates near the City of Union and merges with Little Browns Creek to form Browns Creek. Gregorys Creek flows into Browns Creek just prior to its confluence with the Broad River. There are a few ponds in this watershed (totaling 58.6 acres) and 58.3 stream miles, all classified FW. The lower portion of the watershed resides within the Sumter National Forest.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-064	S	FW	MENG CREEK AT SC 49, 2.5 MI E OF UNION
B-243	S	FW	TRIBUTARY TO MENG CREEK AT CULVERT ON S-44-384, 3 MI E OF UNION
B-155	W/BIO	FW	BROWNS CREEK AT S-44-86, 8 MI E OF UNION
B-335	W	FW	GREGORYS CREEK AT S-44-86, 8 MI E OF UNION

Browns Creek (B-155) - Although two copper excursions occurred, aquatic life uses are fully supported based on macroinvertebrate community data. A very high concentration of zinc was measured in 1995. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Meng Creek (B-064) - Aquatic life uses are fully supported. There is a significant decreasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand and total phosphorus concentration suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions.

Unnamed tributary to Meng Creek (B-243) - Aquatic life uses are fully supported. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and turbidity suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions.

Gregorys Creek (B-335) - Aquatic life uses are fully supported. Recreational uses are not supported due to fecal coliform bacteria excursions.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION</i>
BIG BROWNS CREEK CITY OF UNION/MENG CREEK PLANT PIPE #: 001 FLOW: 1.0 WQL FOR DO,TRC,NH3N	SC0047236 MAJOR DOMESTIC WATER QUALITY
BIG BROWNS CREEK TRIBUTARY SONOCO PRODUCTS/PINCKNEY PLT PIPE #: 001 FLOW: 0.001 WQL FOR BOD5,DO,TRC,NH3N	SC0028789 MINOR INDUSTRIAL WATER QUALITY
MENG CREEK CITY OF UNION/WTP PIPE #: 001 FLOW: 0.062 WQL FOR TRC	SCG645028 MINOR DOMESTIC WATER QUALITY

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
UNION COUNTY SANITARY LANDFILL DOMESTIC	DWP-902 (DWP-116, DWP-049) CLOSED
UNION COUNTY SANITARY LANDFILL DOMESTIC	441001-1101 CLOSED
UNION COUNTY C&D LANDFILL CONSTRUCTION	441001-1201 -----

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains a portion of the City of Union and the unincorporated Monarch Mill Village. Water service is available in most of the watershed, and the area should continue to experience scattered residential development. The Sumter National Forest effectively excludes the lower portion of the watershed from development.

03050106-040

(Sandy River)

General Description

Watershed 03050106-040 is located in Chester County and consists primarily of the *Sandy River* and its tributaries. The watershed occupies 102,351 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Wilkes-Madison series. The erodibility of the soil (K) averages 0.26, and the slope of the terrain averages 14%, with a range of 2-40%. Land use/land cover in the watershed includes: 3.41% urban land, 9.12% agricultural land, 3.28% scrub/shrub land, 0.22% barren land, 83.58% forested land, and 0.40% water.

The Sandy River accepts drainage from Chapel Branch and flows through Chester Reservoir (80 acres) near the City of Chester. Downstream from the reservoir, Dry Fork enters the river followed by Caney Fork Creek (Chester State Park Lake, Twomile Branch, Threemile Branch), Carter Branch, Bear Branch (Mountain Lakes), and Seely Creek (Julies Fork, Walkers Mill Branch, Rock Branch, Bond Branch, Long Branch, Gum Spring Branch). Further downstream, the river accepts drainage from Rocky Branch, Brushy Fork Creek (Smith Creek, Starne Branch), the Little Sandy River (Mobley Creek, Coon Creek), and Johns Creek. Chester State Park is located in this watershed and extends over Twomile Branch and Threemile Branch near the City of Chester. There are several ponds and lakes (10-138 acres) in this watershed and a total of 156.2 stream miles, all classified FW. The lower tip of the watershed resides within the Sumter National Forest.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
CL-023	W	FW	CHESTER STATE PARK LAKE, 100 M E OF SPILLWAY
B-074	S	FW	DRY FORK AT S-12-304, 2 MI SW OF CHESTER
B-075	S/BIO	FW	SANDY RIVER AT SC 215, 2.5 MI ABOVE CONFLUENCE WITH BROAD RIVER

Sandy River (B-075) - Aquatic life uses are fully supported based on macroinvertebrate community data and physical/chemical data. There is a significant decreasing trend in pH. Recreational uses are not supported due to fecal coliform bacteria excursions.

Chester State Park Lake (CL-023) - Chester State Park Lake is a 138-acre impoundment on Twomile Branch and Threemile Branch located within Chester State Park in Chester County. The maximum depth is approximately 17 feet (5.2 m) and the average depth is 8.9 feet (2.7 m). The lake's watershed comprises approximately 9.2 square miles (23.8 km²). Aquatic life and recreational uses are fully supported.

Dry Fork (B-074) - Aquatic life uses are fully supported. There is a significant decreasing trend in pH. In sediment, a very high concentration of chromium and a high concentration of nickel were measured in the 1995 sample; high concentrations of chromium were measured in the 1996, 1997, and 1999 samples; and very high concentrations of cadmium, chromium, and zinc, and high concentrations of copper and

nickel were measured in the 1998 sample. Recreational uses are not supported due to fecal coliform bacteria excursions.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION</i>
SANDY RIVER CITY OF CHESTER/SANDY RIVER WWTP PIPE #: 001 FLOW: 2.133 WQL FOR BOD5,DO,TRC,NH3N	SC0036081 MAJOR DOMESTIC WATER QUALITY

Nonpoint Source Management Program

Camp Facilities

<i>FACILITY NAME/TYPE RECEIVING STREAM</i>	<i>PERMIT # STATUS</i>
CHESTER STATE PARK/FAMILY CHESTER STATE PARK LAKE	12-307-0001 ACTIVE
B&S FAMILY CAMPGROUND/FAMILY SEELY CREEK	12-307-0007 ACTIVE

Land Disposal Activities

Landfill Activities

<i>SOLID WASTE LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
CITY OF CHESTER SANITARY LANDFILL DOMESTIC	DWP-069 (SCD002394070) CLOSED

Land Application Sites

<i>LAND APPLICATION SYSTEM FACILITY NAME</i>	<i>ND# TYPE</i>
PERCOLATION LAGOON HILLTOP MOBILE HOME PARK	ND0080535 DOMESTIC

Mining Activities

<i>MINING COMPANY MINE NAME</i>	<i>PERMIT # MINERAL</i>
CHESTER COUNTY CHESTER COUNTY GRAVEL PIT	1128-23 GRAVEL

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains the City of Chester and a portion of the Town of Lowrys. Water and sewer services are provided in and around Chester and will promote modest residential, commercial, and industrial growth. The majority of the watershed is rural in nature with a high degree of forestry activities. The Sumter National Forest effectively excludes the western edges of the watershed from development.

03050106-050

(Broad River)

General Description

Watershed 03050106-050 is located in Newberry and Fairfield Counties and consists primarily of the **Broad River** and its tributaries from the Tyger River to the Parr Shoals dam. The watershed occupies 146,310 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Pacolet-Wilkes series. The erodibility of the soil (K) averages 0.24, and the slope of the terrain averages 15%, with a range of 2-40%. Land use/land cover in the watershed includes: 76.6% forested land, 11.9% agricultural land, 7.5% water, 2.8% scrub/shrub land, 0.8% urban land, and 0.4% barren land.

This section of the Broad River accepts drainage from its upper reaches, together with the Tyger River Watershed, the Enoree River Watershed, Beaver Creek (McClures Creek, Chicken Creek, Storm Branch, Reedy Branch, Sandy Fork), Rocky Creek, and Terrible Creek. The Parr Shoals dam impounds the Broad River to form Parr Reservoir, which accepts drainage from Hellers Creek (Second Creek, Buck Branch) and Cannons Creek (Rocky Branch, Kerr Creek, Charles Creek, Mud Creek). Monticello Reservoir (7100 acres) is connected to Parr Reservoir by Frees Creek. There are numerous ponds and lakes (totaling 8,497.9 acres) in this watershed and a total of 243.5 stream miles, all classified FW. The Sumter National Forest and the Broad River Waterfowl Area are natural resources in the watershed.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-047	S	FW	BROAD RIVER AT SC 34, 14 MI NE OF NEWBERRY
B-151	BIO	FW	HELLERS CREEK AT SR 97
B-346	W	FW	PARR RESERVOIR 4.8 KM N OF DAM, UPSTREAM OF MONTICELLO RESERVOIR
B-751	BIO	FW	CANNONS CREEK AT US 176
B-328	P	FW	MONTICELLO RES., UPPER IMPOUNDMENT AT BUOY IN MIDDLE OF LAKE
B-327	P	FW	MONTICELLO RESERVOIR, LOWER IMPOUNDMENT BETWEEN LARGE ISLANDS
B-345	W	FW	PARR RESERVOIR IN FOREBAY NEAR DAM

Broad River (B-047) - Aquatic life uses are fully supported; however, there is a significant increasing trend in turbidity. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Hellers Creek (B-151) - Aquatic life uses are partially supported based on macroinvertebrate community data.

Cannons Creek (B-751) - Aquatic life uses are fully supported based on macroinvertebrate community data.

Monticello Reservoir - Monticello Reservoir is a 7100-acre divided impoundment that floods most of Frees Creek watershed in Fairfield County. The upper impoundment is a small recreational lake. The lower impoundment is linked with Parr Reservoir on the Broad River via a pumped storage hydroelectric

facility. Overall, the average depth of Monticello Reservoir is 59 feet (17.9 m) and the maximum depth in the lower impoundment is approximately 126 feet (38.4 m). The lake's watershed comprises approximately 17 square miles (44 km²).

Lake Monticello is comprised of two separate impoundments, and there is a monitoring site on each impoundment. At the upper impoundment site (**B-328**), aquatic life uses are fully supported; however, there is a significant decreasing trend in dissolved oxygen. There is a significant decreasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand, total nitrogen concentration, and turbidity suggest improving conditions for these parameters. At the lower impoundment site (**B-327**), aquatic life uses are fully supported. A high concentration of zinc was measured in water in 1995. A significant decreasing trend in total nitrogen concentration suggests improving conditions for this parameter. Recreational uses are fully supported at both sites.

Parr Reservoir - Parr Reservoir is a 4400-acre impoundment on the Broad River in Fairfield and Newberry Counties, linked with Monticello Reservoir via a pumped storage hydroelectric facility. Parr Reservoir's maximum depth is approximately 25 feet (7.6 m) and the average depth is 15 feet (4.6 m). The reservoir's watershed comprises approximately 4750 square miles (12,302 km²) in North and South Carolina. There are two monitoring sites on Parr Reservoir (uplake **B-346**, downlake **B-345**) and aquatic life and recreational uses are fully supported at both sites.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD)	NPDES# TYPE LIMITATION
BROAD RIVER SCE&G/PARR HYDRO STA. PIPE #: 001 FLOW: M/R	SC0001864 MINOR INDUSTRIAL EFFLUENT
MONTICELLO RESERVOIR SCE&G/SUMMER NUCLEAR STA. PIPE #: 001-013, 015, 016 FLOW: M/R PIPE #: 014 FLOW: 0.12 WQL DO,TRC; NH3N IN SUMMER & WINTER	SC0030856 MAJOR INDUSTRIAL WATER QUALITY WATER QUALITY
PARR RESERVOIR SCE&G/FAIRFIELD PUMPED STORAGE PIPE #: 001 FLOW: M/R	SC0035904 MINOR INDUSTRIAL EFFLUENT
CANNONS CREEK NCWSA/CANNONS CREEK WWTP PIPE #: 001 FLOW: 0.05	SC0048020 MINOR DOMESTIC EFFLUENT
CHARLES CREEK FOREST HILLS SD/ELBO INC. PIPE #: 001 FLOW: 0.02 WQL FOR DO,TRC,NH3N	SC0024571 MINOR DOMESTIC WATER QUALITY

ROCKY CREEK
VULCAN MATERIALS CO./BLAIR QUARRY
PIPE #: 001 FLOW: M/R

SCG730053
MINOR INDUSTRIAL
EFFLUENT

Nonpoint Source Management Program

Land Disposal Activities

Landfill Activities

<i>SOLID WASTE LANDFILL NAME</i> <i>FACILITY TYPE</i>	<i>PERMIT #</i> <i>STATUS</i>
NEWBERRY COUNTY LANDFILL DOMESTIC	DWP-117 CLOSED
NEWBERRY COUNTY LANDFILL DOMESTIC	DWP-044 CLOSED
NEWBERRY COUNTY TRANSFER STATION DOMESTIC	361001-6001 -----

Land Application Sites

<i>LAND APPLICATION SYSTEM</i> <i>FACILITY NAME</i>	<i>ND#</i> <i>TYPE</i>
SPRAYDIELD SHAKESPEARE PRODUCTS GROUP	ND0070033 INDUSTRIAL

Mining Activities

<i>MINING COMPANY</i> <i>MINE NAME</i>	<i>PERMIT #</i> <i>MINERAL</i>
TARMAC MID-ATLANTIC, INC. BLAIR QUARRY	0130-39 GRANITE

Water Supply

<i>WATER USER</i> <i>STREAM</i>	<i>TOTAL PUMP. CAPACITY (MGD)</i> <i>RATED PUMP. CAPACITY (MGD)</i>
VC SUMMER NUCLEAR STATION WTP	3.1
MONTICELLO RESERVOIR	1.5

Growth Potential

There is a low to moderate potential for growth in this watershed, primarily associated with residential development around the reservoirs, the Towns of Prosperity and Pomaria, and the City of Newberry. The upper portion of the watershed is effectively excluded from development by the Sumter National Forest, and the overall lack of adequate utilities to serve the remaining area will limit growth.

03050106-060

(Broad River)

General Description

Watershed 03050106-060 is located in Richland, Newberry, and Fairfield Counties and consists primarily of the **Broad River** and its tributaries from the Parr Shoals dam to its confluence with the Saluda River. The watershed occupies 148,609 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Tatum-Alpin-Herndon-Pacolet series. The erodibility of the soil (K) averages 0.29, and the slope of the terrain averages 13%, with a range of 2-25%. Land use/land cover in the watershed includes: 73.8% forested land, 15.6% urban land, 6.1% agricultural land, 2.0% scrub/shrub land, 2.2% water, 0.2% barren land, and 0.1% forested wetland.

This section of the Broad River accepts drainage from its upper reaches, together with Mayo Creek, Crims Creek (Rocky Creek, Summers Branch), Wateree Creek (Risters Creek), Boone Creek, Freshley Branch, Mussel Creek, and the Little River Watershed. Hollingshead Creek (Boyd Branch, Wildhorse Branch, Metz Branch, Hope Creek, Bookman Creek) enters the river next followed by the Cedar Creek Watershed, Nipper Creek, Nicholas Creek (Swygert Branch, Moccasin Branch), Slatestone Creek, and Burgess Creek. Crane Creek and Smith Branch enter the river at the base of the watershed near the City of Columbia. Sorghum Branch, Dry Branch (Crescent Lake, Stevensons Lake), Elizabeth Lake, and Cumbess Creek drain into Crane Creek followed by North Crane Creek. North Cane Creek accepts drainage from Beasley Creek (Robertson Branch, Lot Branch, Hawkins Branch), Swygert Creek, Dry Fork Creek, and Long Branch. A portion of the Broad River is diverted into the Broad River Canal in Columbia before flowing into the Congaree River. Although depicted in the upper Congaree River Watershed (03050110-010), the canal is associated with this lower Broad River watershed; therefore any facilities or stations in this area will be included in this watershed. There are several ponds and lakes (totaling 671.3 acres) in this watershed and a total of 262.5 stream miles, all classified FW. The Harbison State Forest is located next to the Broad River just downstream of Nicholas Creek and a Heritage Trust Preserve is located along Nipper Creek.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-800	BIO	FW	CRIMS CREEK AT SC 213
B-801	BIO	FW	WATEREE CREEK AT SR 698
B-236	P	FW	BROAD RIVER AT SC 213, 2.5 MI SW OF JENKINSVILLE
B-110	S	FW	ELIZABETH LAKE AT SPILLWAY ON US 21
B-081	BIO	FW	CRANE CREEK AT US 321
B-316	P	FW	CRANE CREEK AT S-40-43 UNDER I-20, NORTH COLUMBIA
B-280	P/BIO	FW	SMITH BRANCH AT N MAIN ST (US 21) IN COLUMBIA
B-337	W	FW	BROAD RIVER AT US 176 (BROAD RIVER ROAD) IN COLUMBIA
B-080	P	FW	BROAD RIVER DIVERSION CANAL AT COLUMBIA WATER PLANT

Broad River - There are three monitoring sites along this section of the Broad River. At the upstream site (**B-236**), aquatic life uses are fully supported; however, there is a significant increasing trend in turbidity. In water, P,P'DDE (a metabolite of DDT) was detected in the 1995 sample. In sediment, P,P'DDE was

detected in the 1999 sample; benzo(b)fluoranthene and chrysene were measured once in 1997; phenanthrene was measured twice in 1997; pyrene was measured in 1997 and 1999; and fluoranthene was measured twice in 1997 and again in 1999. A significant decreasing trend in total nitrogen concentration suggests improving conditions for this parameter. Recreational uses are fully supported at this site. Further downstream (**B-337**), aquatic life uses are fully supported, but recreational uses are partially supported due to fecal coliform bacteria excursions.

In the drinking water diversion canal (**B-080**), aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute standards. A very high concentration of chromium was measured in 1995. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentrations suggests improving conditions for this parameter.

Crims Creek (B-800) – Aquatic life uses are partially supported based on macroinvertebrate community data.

Wateree Creek (B-801) - Aquatic life uses are partially supported based on macroinvertebrate community data.

Elizabeth Lake (B-110) - Aquatic life uses are fully supported. This appears to be a blackwater lake, characterized by naturally low pH and dissolved oxygen concentrations. Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. There is a significant increasing trend in pH. Recreational uses are partially supported due to fecal coliform bacteria excursions. In addition, there was a significant increasing trend in fecal coliform bacteria concentrations.

Crane Creek - There are two monitoring sites along Crane Creek. At the upstream site (**B-081**), aquatic life uses are partially supported based on macroinvertebrate community data. At the downstream site (**B-316**), aquatic life uses are not supported due to occurrences of zinc in excess of the aquatic life acute standards, including a very high concentration of zinc measured in 1996. P,P'DDD (a metabolite of DDT) was detected in the 1997 sediment sample, and P,P'DDT and P,PDDE (another metabolite of DDT) were measured in the 1999 sample. Although the use of DDT was banned in 1973, it is very persistent in the environment. A significant decreasing trend in total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentrations suggests improving conditions for this parameter.

Smith Branch (B-280) – Aquatic life uses are not supported based on macroinvertebrate community data and occurrences of zinc in excess of the aquatic life acute standards, including a very high concentration of zinc measured in 1996. In addition, a very high concentration of chromium was measured in 1995 and there is a significant increasing trend in total phosphorus concentration. A significant increasing trend in

dissolved oxygen concentration and a significant decreasing trend in total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION</i>
BROAD RIVER MARTIN MARIETTA/N. COLUMBIA QUARRY PIPE #: 001 FLOW: M/R	SCG730066 MINOR INDUSTRIAL EFFLUENT
BROAD RIVER RAINTREE ACRES SD/MIDLANDS UTILITIES PIPE #: 001 FLOW: 0.14	SC0039055 MINOR DOMESTIC EFFLUENT
BROAD RIVER TOWN OF CHAPIN PIPE #: 001 FLOW: 1.2 PIPE #: 001 FLOW: 2.4 (PROPOSED)	SC0040631 MAJOR DOMESTIC EFFLUENT EFFLUENT
BROAD RIVER RICHLAND COUNTY BROAD RIVER WWTP PIPE #: 001 FLOW: 2.5	SC0046621 MAJOR DOMESTIC EFFLUENT
MAYO CREEK SCE&G/SUMMER NUCLEAR TRAINING CTR PIPE #: 001 FLOW: 0.004 WQL FOR TRC	SC0038407 MINOR INDUSTRIAL WATER QUALITY
CRANE CREEK PEPSI COMPANY/COLUMBIA PIPE #: 001 FLOW: M/R	SCG250021 MINOR INDUSTRIAL EFFLUENT
CRANE CREEK RICHTEX BRICK CORP. PIPE #: 001 FLOW: 0.008 WQL FOR DO,TRC,NH3N	SC0031640 MINOR INDUSTRIAL WATER QUALITY
CRANE CREEK DITCH COLUMBIA I-20 AUTO TRUCK CTR PIPE #: 001 FLOW: M/R	SC0035416 MINOR INDUSTRIAL EFFLUENT
BEASLEY CREEK MODINE MANUFACTURING CO. PIPE #: 001 FLOW: M/R	SCG250133 MINOR INDUSTRIAL EFFLUENT
NIPPER CREEK VULCAN MATERIALS CO./DREYFUS QUARRY PIPE #: 001 FLOW: M/R	SCG730052 MINOR INDUSTRIAL EFFLUENT

Nonpoint Source Management Program

Camp Facilities

<i>FACILITY NAME/TYPE RECEIVING STREAM</i>	<i>PERMIT # STATUS</i>
WOODSMOKE CAMPGROUND/FAMILY WILDHORSE BRANCH	40-307-0011 ACTIVE
CAPITAL CITY CAMPGROUND/FAMILY CRANE CREEK TRIBUTARY	40-307-0003 ACTIVE

Land Disposal Activities

Landfill Activities

<i>SOLID WASTE LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
RICHLAND COUNTY SANITARY LANDFILL DOMESTIC	401001-1101 (DWP-065) CLOSED
RICHLAND COUNTY C&D LANDFILL	401002-1201 -----
OLD CITY OF COLUMBIA LANDFILL DOMESTIC	----- CLOSED
DARTMOUTH AVENUE C&D DUMP C&D LANDFILL	----- CLOSED
KNIGHTNER STREET C&D DUMP C&D LANDFILL	----- -----
CRAWFORD ROAD C&D DUMP C&D LANDFILL	----- -----
BREAZIO ROAD C&D DUMP C&D LANDFILL	----- -----
ETHEL'S AVENUE C&D DUMP C&D LANDFILL	----- -----
RICHTEX BRICK CORP. INDUSTRIAL	403302-1601 -----
CAROLINA WRECKING ST C&D LC LANDFILL C&D LANDFILL	402451-1301 CLOSED

Mining Activities

<i>MINING COMPANY MINE NAME</i>	<i>PERMIT # MINERAL</i>
MARTIN MARIETTA MATERIALS NORTH COLUMBIA QUARRY	0099-79 GRANITE
MARTIN MARIETTA MATERIALS HARBISON QUARRY	0101-79 SHALE

RICHARDSON CONSTRUCTION CO. RICHARDSON'S MONTICELLO	0738-79 CLAY
BORAL BRICK, INC. LABORDE MINE	0448-79 CLAY
RICHTEX CORPORATION MANNING	0538-79 SHALE
TARMAC MID-ATLANTIC, INC. DREYFUS QUARRY	0129-79 GRANITE

Water Supply

<i>WATER USER STREAM</i>	<i>TOTAL PUMP. CAPACITY (MGD) RATED PUMP. CAPACITY (MGD)</i>
CITY OF COLUMBIA	90.0
BROAD RIVER CANAL	72.0

Growth Potential

There is a high potential for growth in this watershed, which contains the northwest portion of the Greater Columbia Metropolitan Area and ample water and sewer service. In addition, the watershed contains the Town of Peak and portions of the Towns of Irmo, Chapin, Little Mountain, and Blythewood. The I-26, I-20, and I-77 corridors, along with the U.S. Hwy. 321, U.S. Hwy. 21, and U.S. Hwy. 176 corridors, will serve to increase residential, commercial, and industrial growth in the Greater Columbia Area. The northwest portion of the city (St. Andrews, Irmo, and Harbison) will continue to develop as a regional commercial hub for the area. Industrial development along the I-77 corridor is expected to remain strong due to the aggressive economic development policy by the City of Columbia and Richland County. The Killian and Blythewood areas in particular are expected to see increased construction activity. There is a high potential for growth on the eastern edge of the watershed, in Northeast Richland County. New commercial developments (The Village at Sandhills, Rice Creek Village, Sparkleberry Square, Sparkleberry Crossing) are being constructed and are expected to further increase the growth of a rapidly growing residential area.

03050106-070

(*Little River*)

General Description

Watershed 03050106-070 is located in Fairfield, Chester, and Richland Counties and consists primarily of the ***Little River*** and its tributaries. The watershed occupies 117,734 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Wilkes-Cecil series.

The erodibility of the soil (K) averages 0.26, and the slope of the terrain averages 14%, with a range of 2-40%. Land use/land cover in the watershed includes: 91.3% forested land, 4.4% agricultural land, 3.6% scrub/shrub land, 0.4% urban land, 0.2% barren land, and 0.1% water.

Big Creek and Little Creek join to form the headwaters of the Little River near the Town of Blackstock. Downstream of the confluence, the Little River accepts drainage from Camp Branch, Brushy Fork Creek (Dumpers Creek), the West Fork Little River (Weir Creek, Spring Branch, Williams Creek, Opossum Branch), Lick Branch, and Harden Branch. The Jackson Creek Watershed drains into the river next followed by Crumpton Creek, the Mill Creek Watershed, Morris Creek, Gibson Branch (Manns Branch, Russell Creek), and Home Branch. The Little River drains into the Broad River. There are a few ponds and lakes (totaling 115.2 acres) in this watershed and a total of 229.8 stream miles, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-145	S/BIO	FW	LITTLE RIVER AT S-20-60, 3.1 MI SW OF JENKINSVILLE

Little River (B-145) - Aquatic life uses are fully supported based on macroinvertebrate community data and physical/chemical data. A very high concentration of zinc was measured in 1995. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION</i>
MORRIS CREEK MARTIN MARIETTA/RION QUARRY PIPE #: 001 FLOW: M/R	SCG730060 MINOR INDUSTRIAL EFFLUENT

Nonpoint Source Management Program

Camp Facilities

FACILITY NAME/TYPE
RECEIVING STREAM

PERMIT #
STATUS

GLENN'S 6-10 CAMPGROUND/FAMILY
LITTLE RIVER TRIBUTARY

20-307-0012
ACTIVE

Mining Activities

MINING COMPANY
MINE NAME

PERMIT #
MINERAL

MARTIN MARIETTA MATERIALS
RION QUARRY

0100-39
GRANITE

Growth Potential

There is a low potential for growth in this watershed due to the absence of public utilities.

03050106-080
(Jackson Creek/Mill Creek)

General Description

Watershed 03050106-080 is located in Fairfield County and consists primarily of **Jackson Creek and Mill Creek** and their tributaries. The watershed occupies 37,525 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Madison-Cecil-Wilkes series. The erodibility of the soil (K) averages 0.26, and the slope of the terrain averages 12%, with a range of 2-40%. Land use/land cover in the watershed includes: 77.8% forested land, 9.9% agricultural land, 9.5% urban land, 2.1% scrub/shrub land, 0.9% water, and 0.2% barren land.

Jackson Creek is created by the confluence of Winnsboro Branch and Moore Creek near the Town of Winnsboro. Jackson Creek accepts drainage from Jordan Branch, Kennedy Creek, Sand Creek, Stitt Branch, and Gladney Branch before flowing into the Little River. Mill Creek drains into the Little River downstream of Jackson Creek. There are several ponds and lakes (totaling 378.1 acres) in this watershed and a total of 54.8 stream miles, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-123	S	FW	WINNSBORO BRANCH AT US 321, ABOVE WINNSBORO MILLS OUTFALL
B-077	S	FW	WINNSBORO BRANCH BELOW PLANT OUTFALL
B-102	W/BIO	FW	JACKSON CREEK AT S-20-54, 5 MI W OF WINNSBORO
B-338	W	FW	MILL CREEK AT S-20-48, 10 MI SW OF WINNSBORO

Jackson Creek (B-102) - Aquatic life uses are partially supported based on macroinvertebrate community data. A very high concentration of chromium was measured in 1995. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Winnsboro Branch - There are two monitoring sites along Winnsboro Branch. At the upstream site (**B-123**), aquatic life uses are fully supported. A significant increasing trend in dissolved oxygen concentration and a significant decreasing trend in five-day biochemical oxygen demand suggest improving conditions for these parameters. At the downstream site (**B-077**), aquatic life uses are not supported due to occurrences of copper and zinc in excess of the aquatic life acute standards, including a high concentration of zinc measured in 1997. A very high concentration of chromium was measured in 1995. There is a significant increasing trend in total phosphorus concentration. P,P'DDD (a metabolite of DDT) was detected in the 1996 sediment sample and a very high concentration of nickel was measured in the 1998 sample. Recreational uses are not supported at either site due to fecal coliform bacteria excursions.

Mill Creek (B-338) - Aquatic life uses are fully supported. Recreational uses are not supported due to fecal coliform bacteria excursions.

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION</i>
JACKSON CREEK TOWN OF WINNSBORO/JACKSON CREEK PLANT PIPE #: 001 FLOW: 1.6 WQL FOR BOD5,DO,TRC,NH3N	SC0020125 MAJOR DOMESTIC WATER QUALITY
JACKSON CREEK TRIBUTARY UNIROYAL GOODRICH TIRE MFG. PIPE #: 001 FLOW: M/R	SCG250148 MINOR INDUSTRIAL EFFLUENT
JORDAN BRANCH ROYAL HILL SD/MIDLANDS UTILITY PIPE #:001 FLOW: M/R	SC0031046 MINOR DOMESTIC EFFLUENT

Nonpoint Source Management Program

Land Disposal Activities

Landfill Activities

<i>SOLID WASTE LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
CHAMBERS FAIRFIELD COUNTY SW TRANSFER STA. DOMESTIC	202400-6001 -----
FAIRFIELD COUNTY LANDFILL DOMESTIC	DWP-090; DWP-024 CLOSED

Water Supply

<i>WATER USER STREAM</i>	<i>TOTAL PUMP. CAPACITY (MGD) RATED PUMP. CAPACITY (MGD)</i>
TOWN OF WINNSBORO	0.7
SAND CREEK	0.5
TOWN OF WINNSBORO	8.0
MILL CREEK - 192 ACRE LAKE	3.1

Growth Potential

There is a low potential for growth in this watershed except for in and around the City of Winnsboro, where water and sewer services exist. The recent closings of the Mack Truck and the Fuji Copian Winnsboro plants will further lower the potential for growth in the watershed.

03050106-090

(Cedar Creek)

General Description

Watershed 03050106-090 is located in Fairfield and Richland Counties and consists primarily of *Cedar Creek* and its tributaries. The watershed occupies 64,579 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Herndon-Helena-Georgeville series.

The erodibility of the soil (K) averages 0.39, and the slope of the terrain averages 11%, with a range of 2-25%. Land use/land cover in the watershed includes: 0.8% urban land, 7.4% agricultural land, 1.4% scrub/shrub land, 90.1% forested land, and 0.3% water.

Big Cedar Creek originates near the Town of Ridgeway and accepts drainage from Center Creek (Rock Dam Creek), Persimmon Fork, Horse Creek, Williams Branch (Big Branch), and Little Cedar Creek (Crooked Run Creek, Bethel Pond, Smith Branch, Chappel Branch). Big Cedar Creek merges with Harmon Creek (Little Horse Branch, Elkins Creek) to form Cedar Creek, which flows into the Broad River. There are a few ponds and lakes (totaling 133.8 acres) in this watershed and a total of 150.0 stream miles, all classified FW.

Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
B-320	W/BIO	FW	BIG CEDAR CREEK AT SC 215

Big Cedar Creek (B-320) - Aquatic life uses are fully supported. Recreational uses are partially supported due to fecal coliform bacteria excursions. A total maximum daily load (TMDL) has been developed to address this impairment (see Watershed Protection and Restoration Strategies below).

NPDES Program

Active NPDES Facilities

<i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i>	<i>NPDES# TYPE LIMITATION</i>
CEDAR CREEK TRIBUTARY TOWN OF RIDGEWAY WWTP PIPE #: 001 FLOW: 0.12 WQL FOR BOD5,DO,TRC,NH3N	SC0022900 MINOR DOMESTIC WATER QUALITY

Nonpoint Source Management Program

Land Disposal Activities

Landfill Activities

<i>SOLID WASTE LANDFILL NAME FACILITY TYPE</i>	<i>PERMIT # STATUS</i>
TRAPP/DERRICK LANE ST C&D LANDFILL CONSTRUCTION	202900-1301 -----
TNT SANDS C&D LANDFILL CONSTRUCTION	402423-1201 -----

Growth Potential

There is a low potential for growth in the majority of this watershed. Portions of the Towns of Ridgeway and Blythewood are located along the eastern edge of the watershed. Water and sewer services are available in the Blythewood area, which is expected to be a moderate to high growth area.

Watershed Protection and Restoration Strategies

Total Maximum Daily Loads (TMDLs)

A total maximum daily load (TMDL) for fecal coliform has been developed for Cedar Creek. Levels of fecal coliform bacteria can be elevated in water bodies as the result of both point and nonpoint sources of pollution. Between 1991 and 1995, 25% of the samples collected at station B-320 exceeded the 400 colonies/100ml standard. Targeting agricultural land for reduction of bacteria is the most effective strategy for this watershed.

A target level for fecal coliform bacteria of 175 colonies/100ml was established. This translates to an agricultural bacterial loading reduction of 52%. Forested lands are not targeted for reduction, as there are currently no acceptable means of reducing fecal coliform sources within that land use.

There are several tools available for implementing this TMDL, including Nonpoint Source (NPS) pollution outreach activities and materials. SCDHEC will continue to monitor water quality in Cedar Creek to evaluate the effectiveness of these measures.

Funding for TMDL implementation activities is currently available. For more information, see the Bureau of Water web page www.scdhec.net/water or call the Watershed Program at (803) 898-4300.